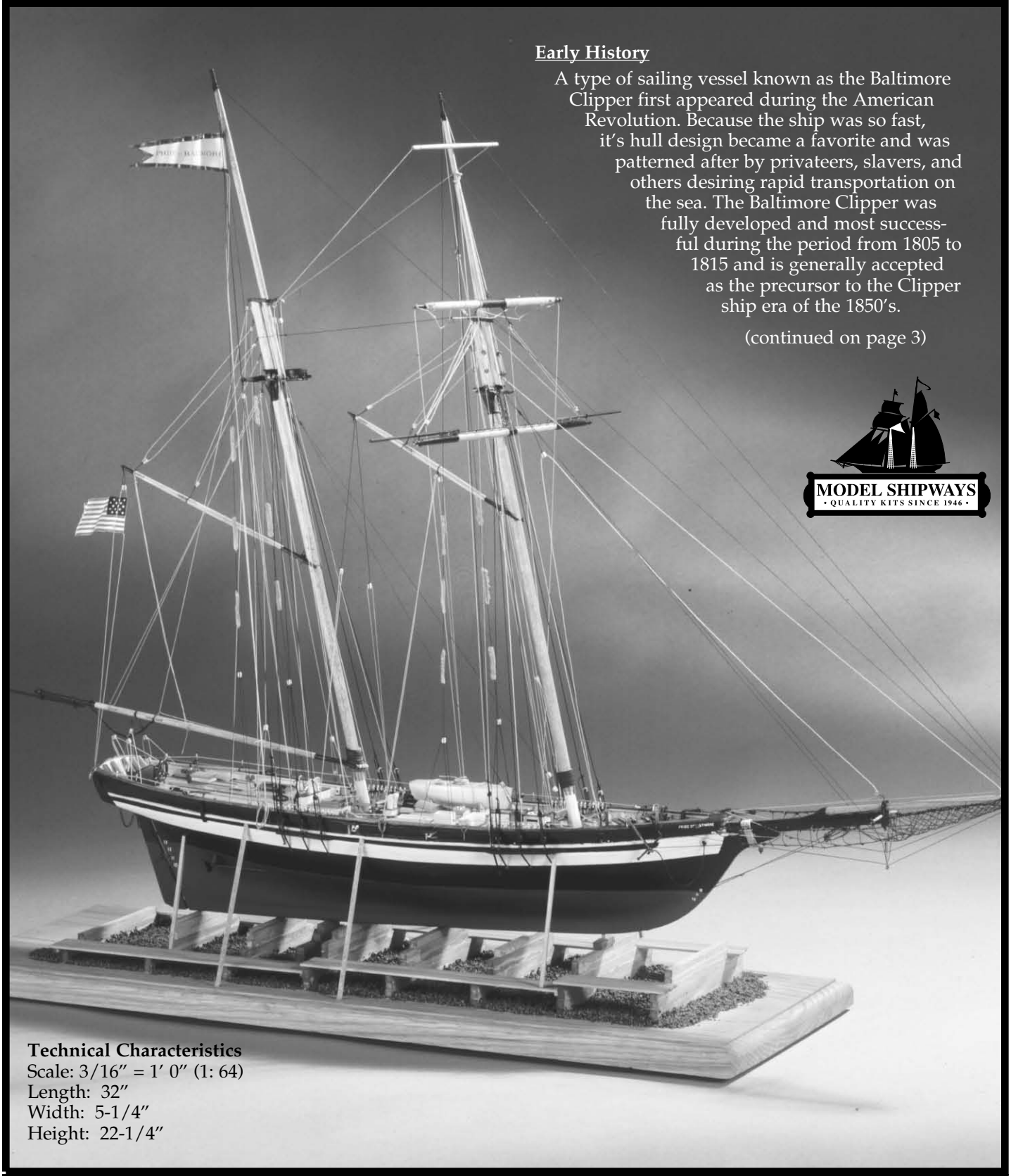
The Baltimore Clipper

PRIDE OF BALTIMORE II



Early History

A type of sailing vessel known as the Baltimore Clipper first appeared during the American Revolution. Because the ship was so fast, it's hull design became a favorite and was patterned after by privateers, slavers, and others desiring rapid transportation on the sea. The Baltimore Clipper was fully developed and most successful during the period from 1805 to 1815 and is generally accepted as the precursor to the Clipper ship era of the 1850's.

(continued on page 3)

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Technical Characteristics
Scale: 3/16″ = 1′ 0″ (1: 64)
Length: 32″
Width: 5-1/4″
Height: 22-1/4″

Model Shipways **Kit No. MS2120**

Instruction Manual

The Baltimore Clipper
Pride of Baltimore II
1988

By Ben Lankford, 1994

Built-up Model by Bob Bruetsch, 1994
Detail photos of actual ship by Bob Bruetsch, 1994

The Model Shipways plans for *Pride of Baltimore II* were prepared in 1993 and 1994. They were developed from the original design drawings for the ship by Naval Architect Thomas C. Gillmer. Mr. Gillmer was also the designer of the first *Pride of Baltimore*, and other replica ships such as the pungy, *Lady Maryland*, and the brig, *Peggy Stewart*.

In addition to the design drawings, the Model Shipways plans incorporate current as-built details of the ship. A number of modifications were made to the original design drawings during construction, and even during the period following construction. Photographs were taken, and detailed measurements were made to assure an accurate representation of the ship in Baltimore, Maryland. The plans represent the ship as it appeared from October 1993 to April 1994.

Model Shipways is indebted to Mr. W. Bruce Quackenbush, Jr., Executive Director of the Pride of Baltimore, Inc. ; Mr. Michael McGeady, Deputy Director; and Captains Jan Miles and Robert Glover. These people not only encouraged the project, but assisted with taking measurements off the ship, made numerous sketches of details, and provided descriptions of the various rigs and operations. With the ship continually on the move around the world, the project could not have been completed without their assistance.

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(Continued from cover)

It was as a privateer during the War of 1812 that the Baltimore Clipper became most famous. With sleek lines and few guns, the Baltimore Clippers were light and exceptionally fast. Their maneuverability made it possible to wreak havoc on the British; the speedy privateers could overtake and outrun the enemy with ease, and this enabled the privateering owners to take large profits from the many prizes they seized. When the war ended in 1815 with the Treaty of Ghent, the ship type began to diminish. Many of the schooners were sold to South American and Caribbean owners. By 1860, the Baltimore Clipper was gone.

During the 17th and 18th centuries, the waterways of the Chesapeake Bay provided an excellent home and work environment for the early settlers. The overseas demand for tobacco and new ships kept the area alive with commerce. Many talented shipwrights plied their trade at the numerous shipyards located on the Eastern Shore. One in particular, Thomas Kemp, departed for Baltimore and Fells Point in 1803 to seek his fortune and avoid the local competition. Establishing himself as a leader, he built many fast and notorious Baltimore Clippers. With the newly independent America's need to establish itself in European trade, and develop militarily on the open seas, his success was immediate, and paved the way for others who migrated north. Because Baltimore had the investment capital, it could provide the higher wages that eventually drew the best builders and craftsmen, as well as the many excellent captains and sailors required to man the ships. With the turning away from shipping tobacco to the major export of flour, Baltimore became one of the most productive shipbuilding and shipping centers of the time.

Although the ship type had been fully developed, the name Baltimore Clipper was not applied to it until the ship was almost extinct. The type was once called a Baltimore Flyer, and early records simply refer to it as a Virginia-Built Boat, or Fast Sailing Schooner: light and sleek, fast and seaworthy, it was a topsail schooner with extremely raked masts. It had a wide, flush deck to allow easy handling of the ship, and when fitted as a privateer, it had guns. The type seems to have developed from the Chesapeake Bay sloop, soon found to be too small.

The Baltimore Clipper carved out a place for itself in history. The schooners facilitated the nation's ability to win independence, and they helped the city of Baltimore establish its identity as a major shipbuilding center.

The First Pride of Baltimore

In 1974, officials from the City of Baltimore wanted to re-create a Baltimore Clipper as a means of providing public attraction to the Inner Harbor. They required that the craft be an authentic replication of an early 19th century Baltimore Clipper, and that it be built on location at the Inner Harbor waterfront.

Thomas C. Gillmer, a noted author, historian, and former director of Naval Architecture for the U.S. Naval Academy in Annapolis, was hired as the designer. The bid for construction was won by the International Historical Watercraft Society, a corporate designation of Mr. Melbourne Smith of Annapolis, Maryland. Mr. Smith is a noted authority on Baltimore Clippers.

The ship's design was based on early drawings done in Britain during dockyard surveys after the war of 1812. The plans were of several original ships that were captured privateers. After reviewing them, it was decided that Baltimore's ship would be 90 feet in overall length with a 23-foot extreme beam, adding up to 140 tons.

In late 1976, the ship was officially named the *Pride of Baltimore*, taking it's name from the nickname affectionately given to the famous Baltimore Clipper, *Chasseur*. The *Chasseur* was built in 1813 at Fells Point in Baltimore by Thomas Kemp. (Note: the ship's boat on the *Pride of Baltimore II* carries the name *Chasseur*.)

Ship's boat Chasseur

The *Pride of Baltimore* was launched at Inner Harbor on February 27, 1977 and sailed on May 1, 1977. The ship logged over 150,000 miles sailing to and from such places as the Great Lakes, Spain, Europe and from Newfoundland to the Florida keys, and many other ports. On May 14, 1986, the *Pride of Baltimore* met hurricane winds on its return home from St. Thomas and was lost at sea along with four crew members.

Pride of Baltimore II

After a period of mourning, it was decided to replace the *Pride of Baltimore*. Late in 1986, Thomas Gillmer once again was hired as the designer. The contracted builder was G. Peter Boudreau, a shipwright, crew member, and a captain of the first *Pride of Baltimore*.

Pride of Baltimore II was to be a larger ship: 108 feet overall with a 26-foot beam, and weighing 197 tons. Among these and other differences, this schooner would have a greater cruising radius and be licensed by the Coast Guard for carrying passengers.

The *Pride of Baltimore II* keel was laid on May 3, 1987 and the schooner was launched on April 30, 1988. It was commissioned on October 23 and on January 3, 1989 received full certification and put out to sea. Since then, the ship has sailed to many ports. The schooner's permanent home is Inner Harbor, Baltimore, Maryland.

While the *Pride of Baltimore II* is as authentic as possible, a few variations in design were required to meet today's standards of economy and safety. Interior watertight bulkheads were provided for safety, and the ship was fitted with auxiliary engines and feathering props. These were required because of the busy ports the ship is scheduled to visit. The ship also has a steering wheel instead of a tiller arm typical of a 19th century ship. If fitted with a tiller arm, the Coast Guard would require a two-helmsman watch. To do this, the crew would have to be increased by four which was unacceptable to officials. Also, it was decided not to include a fore course on the foremast. Such a sail was probably carried on Baltimore Clippers of the past, but was only used in light wind conditions. This sail plan decision was made during the building of the first *Pride of Baltimore*.

If fitted as a privateer, the *Pride of Baltimore II* would have to carry guns. So, the ship design included ten gun ports with five on each side. Simply for show, the schooner carries four large cannons and two small swivel guns.

More History

For a complete history of the Baltimore Clippers, and both the *Pride of Baltimore* and *Pride of Baltimore II*, consult the bibliography for some excellent books with many good photographs and drawings.

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BEFORE YOU BEGIN

The *Pride of Baltimore II* is a very beautiful schooner and makes a splendid model. The plank-on-bulkhead hull construction with laser-cut parts offers a unique building experience. It assures an accurate hull form, and develops an understanding of how real ships are constructed.

The kit is manufactured to a scale of 3/16″ = 1′ 0″ and reflects the scale of the plans. The kit is supplied with a set of Britannia, brass, and wooden fittings to eliminate problems in making or machining such parts from scratch, which may be beyond the ability or resources of the average modeler. Many of these fittings, however, will require final finishing before they are suitable for installation on the model. This will be especially true for the Britannia fittings and will be discussed later.

This kit will provide less experienced modelers with the opportunity to acquire some scratch-building techniques. As an aid, various techniques will appear throughout the instructions. While the modeling progresses, you will see where you may want to substitute some of the kit fittings with your own creations. By all means try them, especially if you think you can improve the model. The worst that can happen is a little lost time. But, the experience gained will be most valuable for future projects.

If you are a beginner, take your time. This model has a considerable amount of detail and small parts. Make sure you complete one stage before moving to the next. When things go awry, consider doing it over.

WHAT YOU'LL NEED TO START CONSTRUCTION

The following tools and supplies are recommended for the construction process. Modelers who have built before may have their own favorites.

A. Knives
1. Hobby knife
2. No. 11 blades

B. Files
Set of needle files

C. Clamps
1. A few small C-clamps
2. Wooden clothespins
3. Rubber bands, #16 and #33

D. Tool Set
A small carving tool set or individual gouges and chisels for carving center keel rabbets, stern filler pieces, tapering the keel/stem, and carving the ship's boat.

E. Sharpening Stone
Necessary to keep tools razor sharp

F. Boring Tools
1. Set of miniature drills: #60 to #80
2. 1/16″, 3/32″, and 1/8″ drills
3. Pin vise

G. Miscellaneous
1. Tack hammer
2. Tweezers (a few)
3. Small fine-pointed scissors
4. Miniature pliers (small round and flat nose)
5. Bench vise (small)
6. Soldering iron or torch, solder and flux
7. Sewing thread (black and tan for seizing)
8. Beeswax block (for treating rigging lines)
9. 1/2″ or 3/4″ masking tape
10. Wire cutters (for cutting fine wire and strip metal)

H. Sandpaper
Fine and medium grit garnet or aluminum oxide sandpaper (#100 to #220)

I. Sail cloth
Light weave cotton, linen, or balooner cloth, if you intend to add sails. Model Expo carries a suitable fine weave 100% cotton muslin which is unbleached and doesn't need dyeing.

J. Finishing
1. Paint Brushes
   a. fine point for details
   b. 1/4″ to 1/2″ flat square for hull

K. Supplies
(will be covered in detail in the Painting & Staining section and throughout the instructions)
1. Paints
2. Primer
3. Stains and varnish
4. White or Carpenter's (yellow) wood glue
5. Super glue
6. Five-minute epoxy glue
7. Wood filler

Note about glues: White glue, or Carpenter's wood glue (yellow in color; also available in tan), will suffice for most of the model. Five-minute epoxy provides extra strength for gluing fittings. Cyanoacrylate glue (super glue), such as Jet, can be used for quick adhesion and is ideal for adding a touch to a rigging seizing to hold it in place. The best super glue for most applications is a medium viscosity gap-filling type. The watery thin type is recommended to fill a narrow crack by capillary action, and for quickly securing hull planking to the bulkheads.

HOW TO WORK WITH THE PLANS & PARTS

Before starting model construction, examine the kit and study the plans carefully. Familiarizing yourself with the kit will serve two purposes. First, it will let you determine that all parts have been supplied as listed. And second, you'll be surprised at just how quickly handling the parts allows you to better understand the kit requirements. Try to visualize how every part will look on the completed model. Also, determine ahead of time what must be done first. The instructions will help you in this regard, but a thorough knowledge of the plans at the outset is essential.

It is suggested that all small fittings and hardware be sorted into labeled boxes or compartments to avoid loss during the building process.

1. The Plans

Six Plan Sheets are provided:
1. Plank-On-Bulkhead Hull Patterns - Sheet 1 of 6
2. Plank-On-Bulkhead Hull Construction - Sheet 2 of 6
3. Hull Plan and Profiles - Sheet 3 of 6
4. Hull and Spar Details - Sheet 4 of 6
5. Rigging and Sails - Sheet 5 of 6
6. Rigging Sections and Details - Sheet 6 of 6

In addition, a set of sketches appears throughout the instruction manual to further illustrate the various stages of construction.

The *Pride of Baltimore II* kit is manufactured to a scale of 3/16″ = 1′ 0″. Each plan sheet is drawn to the exact scale that the model is to be built, except where some details have been enlarged for clarity. Most often, a clarifying detail is twice as large as the model scale; 3/8″ = 1′ 0″. Most dimensions can be lifted directly off the plans by using a set of draftsman dividers or by using a "tick" strip, which is simply a piece of paper used to "pick up" the dimensions (a roll of calculator tape works very well). Lay your paper strip over the plan and mark the lengths of items carefully with a sharp pencil. Then use the strip to transfer the marks to the wood or item to be made to scale. When ticking the larger scale details, just cut the measurement in half.

It is handy to have a triangular architect's scale. Measuring and cutting parts using the 3/16″ scale gives you a better feel for real ship sizes. You would need this scale for building a model with full ship sizes shown on the plans. However, the *Pride of Baltimore II* plans have already been converted and show only actual model sizes. Actual sizes were converted to the nearest 1/64″, or 1″ full scale. Consequently, you will be working in increments of 1/64″. For example, if the actual size was 2-1/2″ (or 5/128″ model scale) it has been rounded up to 3/64″; close enough at this scale and it better fits the standard basswood sizes.

2. Making Allowances Along the Way

Try to be exact when following the plans, but use common sense along the way. You may need to make adjustments or allow for small differences in how your model is shaping up; perhaps your mast has too much rake (the angle at which it sits). When lines go to belaying points they should not drape over parts or conflict with other lines. If necessary, move a belaying point or a fairlead. In other words, put yourself on the ship and use your judgement.

3. Understanding Hull Lines

Beginners may not be familiar with hull lines. Buttock lines are vertical longitudinal planes cut through the hull. Waterlines are horizontal planes, and sections are transverse vertical planes. All of these lines define the hull shape and are used by the draftsman to fair the hull form (create regular even curves).

A complete set of hull lines is not shown on the plans because they are not needed for this particular model. With the plank-on-bulkhead construction, the laser-cut bulkheads and center keel define the hull form. These are based on the *Pride of Baltimore II* designer hull lines to the outside of the planking, but are made smaller to allow for the thickness created by adding the planks. The Hull Planking Layout on Sheet 2 shows all the bulkhead lines together which are similar to a lines drawing body plan that shows the sections. Consult these lines when it is necessary to determine the hull form slopes. This will be necessary when installing the bulwarks since the bulwark stanchions are built separately from the lower bulkheads.

4. Using Basswood Lumber

Standard cut basswood is available in sheets and strips. Normally, thicknesses are available in 1/32″, 1/16″, 3/32″, 1/8″, 5/32″, 3/16″, 1/4″, and 1/2″. Widths of strips are available in the same increments. Sheets may be 1″, 2″, 3″, or 4″. A thickness of 3/64″ is a manufactured thickness, but not found in many catalogs. It is being supplied in this kit because it is needed for full-size ship thicknesses of 3″, as is the case for the main rail.

Note: Your kit will contain either U. S. grown basswood or European limewood. Lime is similar to and just as good a model wood as our well-known basswood. In fact, it has superior steam bending qualities to basswood. Both woods are a similar species from trees called lime and linden. Limewood is often called basswood in Europe.

For the model scale 3/16″ = 1′ 0″, 1/64″ is equal to 1″ full ship size. 1/32″ is equal to 2″, and so on. Generally, the available sizes of basswood fit the full ship size quite well and the strips or sheets can be used directly. Occasionally, you will find a size where the strip must be thinner than the basswood size supplied. In order to use a correct thickness, you will need to sand down a certain thickness of basswood. This is easily done with a sanding block before making a part.

If you are fortunate enough to own a powered sanding thickness planer for models, all the better. These can be purchased commercially. You can also make your own, using a drum sander in a drill press. Clamp a block alongside the sander so the wood can be inserted between the block and sander. It's a makeshift deal, but it works quite well.

A thickness of 1/64″ is required for many parts in this kit. Birch aircraft three-ply plywood could be used for this thickness. However, since it is birch, not basswood, it will not stain exactly the same as basswood. There is a lot of staining to be done, so it is preferable to stick with basswood so that the color will be uniform. Just bite the bullet and sand a 1/32″ piece down to 1/64″.

It is a good idea to sort the wood contained in the kit by thickness. When building a certain part, select a suitable size from the proper thickness pile. After cutting what you need, return the remaining piece to that thickness pile. This saves a lot of time looking for a given thickness. Don't worry about using a piece for one item that was intended for another. It will all come out in the wash. There is enough extra wood in the kit so you should not run out before you complete the model.

5. Cast-Metal Fittings

The kit is supplied with Britannia metal castings. The Britannia metal is a great improvement over the white metal that was used in some older kits. Unlike white metal and pewter, Britannia does not contain lead, so there are no possible corrosion problems. Many of these fittings, however, will require final finishing before they are suitable for installing on the model.

Before painting the cast-metal fittings, clean them up by removing all the mold-joint flash. To do this, use a No. 11 hobby blade to cut the flash, then file or sand with fine sandpaper. It is also suggested that you clean the fittings thoroughly with warm soapy water before applying primer. Make sure they are rinsed thoroughly and allowed to dry before painting.

6. Soldering & Working with Brass

The *Pride of Baltimore II* is a replica ship of a period that had very little iron fittings. Consequently, you will not be required to do much soldering. Many of the fittings are cast Britannia. However, some items are difficult to cast or would be too soft, so these items must be made from brass strip and wire. Here are a few tips on soldering those or items you decide to scratch build.

Brass sheet and strips can be cut with a small pair of tin snips or heavy scissors. Heavier brass will require the use of a jeweler's saw. After cutting, all edges should be smoothed with needle files and fine wet-or-dry sandpaper. When cutting slivers from the brass sheet, you may notice that shears tend to bend the sheet sideways, as well as curl the piece. To straighten the edges in both directions, grip them with a pair of small pliers.

Drilling holes in brass can be accomplished using small drills and a pin vise, which is a slow process. A Dremel Moto-Tool mounted on a Dremel drill press is ideal. This tool is worth the cost. Prior to drilling, use a small centerpunch to start; otherwise, these small drills tend to wander. Lubricate with a light oil and drill very slowly to avoid breakage. When using the Dremel, clamp the pieces in place or hold them down with a stick of wood. The brass will be very hot, so keep your fingers off!

Soldering: The key here is to keep all brass parts clean. Use a solvent, or lightly sand, or both. Keep your fingers off to avoid grease spots. Soldering is easy if care is taken to set up your work area properly first. Use jigs or other holding devices, so the parts do not move around. Soldering can be done with a small torch or pencil soldering iron. First, add flux to the joint; just enough to do the job. The solder will flow where the flux is applied. Next, heat the joint.

This sequence is important. The larger the parts, the longer it will take to heat the brass before the solder will flow. If you get too much solder on the joint, file it off with needle files. You'll want the joint to look like the real thing, not a big glob of fillets.

Solder: Today, there are many lead-free solders available and they are very strong. There is not much need to use pure silver solder. It is much more difficult to use because of the high melting temperature. Some of the lead-free solders have a small percentage of silver in the composition but the melting temperature is low.

PAINTING & STAINING THE MODEL

It may seem strange to begin an instruction manual with directions on applying the finishes to the model. Not so! Much time and effort can be saved, and a more professional result can be obtained, if the finishing process is carried out during construction. Proper timing in application of finishes and the use of masking tape to define painted edges should eliminate unsightly glue marks and splotchy stained surfaces. In the end, following these general suggestions will be to your advantage.

Paint:

Use a flat-finish paint such as the excellent model paints made by Model Shipways (www.modelexpo-online.com). You could also use artist's paints by Jo Sonja (used by many bird carvers) or Holbein Acryla Gouache. These paints are a combination acrylic-gouache.

Paint colors:

The color scheme used for the *Pride of Baltimore II* is given on the plans. You will see color notes such as "color A." In a notes column on plan sheet 3, the color A is described. In order to convey a more accurate color, commercial Floquil ship model or railroad model colors and stains, and Minwax stains are referenced. A color was selected as close as possible to the real ship colors.

If you use a paint other than Model Shipways, match the Model Shipways color referenced on the plans with the paint you select, or get as close as you can.

Primer:

Use a grey primer. Model Shipways brand is excellent. The grey color will highlight sanding scratches and other defects better than white primer. Prime all woodwork to be painted, and prime all metal fittings. Lightly sand the primed items. Use a spackling compound, such as Pic-n-Patch brand, to fill any scratches and defects, then re-prime. Careful! Do not prime parts to be stained or varnished.

Stains & Finishes:

For natural finished wood, use a protective coating after staining, such as low sheen polyurethane varnish or the Floquil coatings. You can also use an oil-resin mix such as natural Minwax. Model Shipways stain, or Minwax stains can be used to tone the wood.

Brushes & Procedures:

Use good quality soft sable or synthetic hair artist brushes. A small pointed brush is good for details. For the main hull areas, use a 1/4 to 1/2 inch flat brush.

Before painting, clean the model with a tack rag. Apply your paint in smooth even strokes, overlapping the strokes as you go. Thin the paint enough to eliminate brush strokes, but not run. You will need four or five coats of the light colors to cover the grey primer, and maybe only two coats of the dark. Check your finish between coats, and sand or add spackle as necessary to get rid of any blemishes.

You will be told how to mark the load waterline location later. At this line, and anywhere else two colors meet, use masking tape. Electrician's black plastic tape is ideal. It leaves a nice edge and is not overly sticky. Do not use drafting tape. The edges are wrinkled and paint may run under the edge.

STAGE A

FRAMING THE PLANK-ON-BULKHEAD HULL

1. Bending Wood

Building a P-O-B hull requires some wood bending and twisting, and the wood must remain in the desired position so as not to put too much stress on glue joints and fasteners. The term "steam-bent" will be used throughout the text whenever such a process is necessary. However, here are three ways to do it.

Steam-bending–For actual steam-bending, hold the piece over a kettle of steaming water and bend. Hold the wood in position until it cools. It should remain nearly in that position, but may spring back slightly.

Soaking–Another method is to soak the piece in warm water for several hours. Try adding a little household ammonia to the water. You can also use pure ammonia. This speeds up the soaking process and makes the wood fibers slippery so the wood is easily bent. Hold the wood in position with a form after soaking and let it dry completely.

Hot iron–You may also bend wood quickly over a soldering iron, but don't let it get too hot. A large soldering iron with a tubular end is ideal. The tube near the handle is not as hot as the very end. It is also possible to purchase model plank bending irons commercially. They are designed for controlled heat.

2. Center Keel Assembly

The first step in constructing the hull is to assemble the two laser-cut center keel pieces. First, use a sharp pencil and mark the bulkhead locations below the slots and the WL reference lines. One line is used to locate Bulkheads "A" through "L" and another for locating Bulkhead "M". Mark on both sides of each center keel piece. Be especially critical in locating the reference lines. Measure from several points from the plans. The reference lines are a key to proper alignment.

Place the two parts, 1 and 2, over a sheet of wax paper or plastic wrap, on a flat building board or table. Glue the joint with white or carpenter's wood glue. Use a steel or aluminum straight edge to align the WL reference lines. Place a weight on each piece to hold it down while the glue dries. Let the glue dry at least overnight, preferably 24 hours (see figure 1).

3. Cutting the Rabbet

Cut the rabbet in the center keel. The bearding line is the intersection of the center keel and the inside face of hull planks. After the center keel is ready, mark the bearding line on both sides. The bearding line appears along the sternpost and the keel/stem. Measure from the P-O-B plans. Using a chisel, start the rabbet cut at the bearding line and cut toward the edge of the center keel. When the planking is installed, the planks will lie flush on the cut portion from bearding line to rabbet (see figure 2).

FIG. 1 – Center Keel Assembly

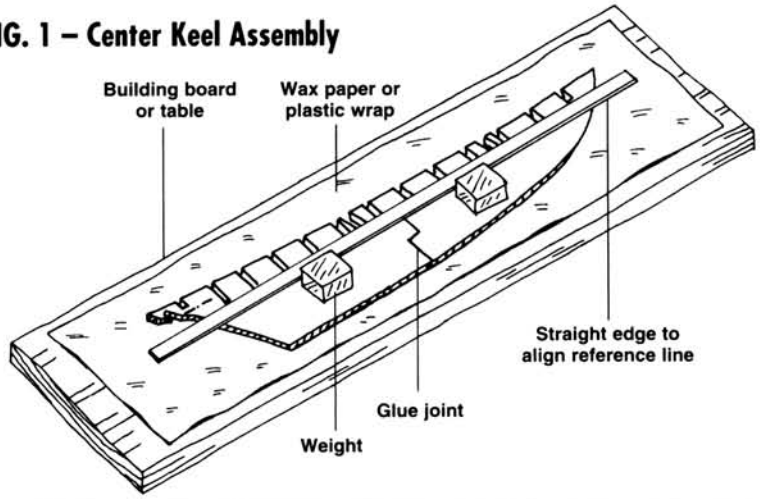


FIG. 2 – Cutting the Rabbet

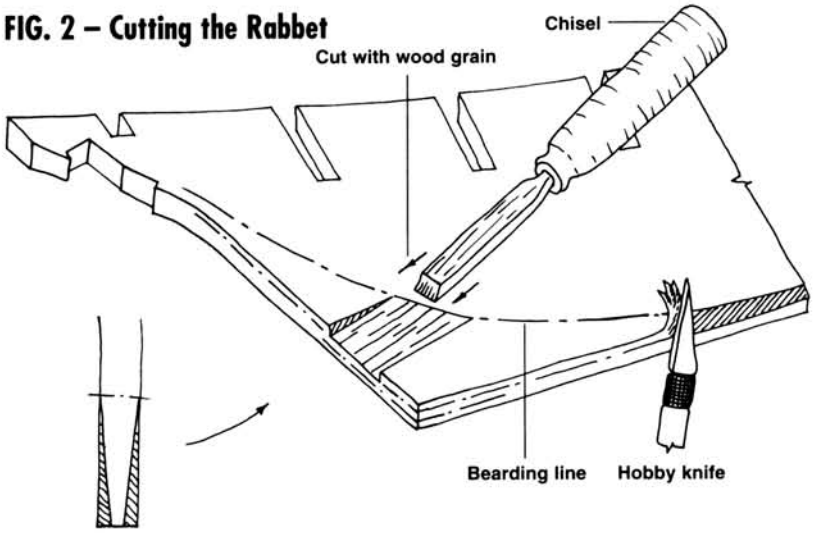


FIG. 3 – Installing the Keel/Stem & Sternpost

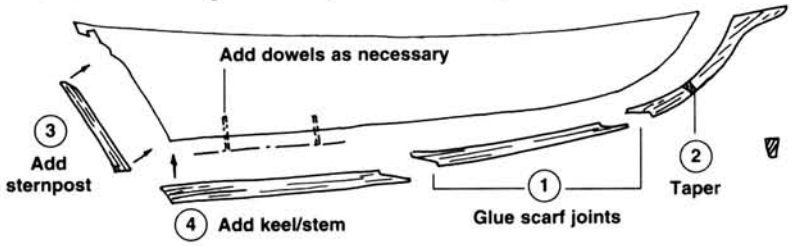
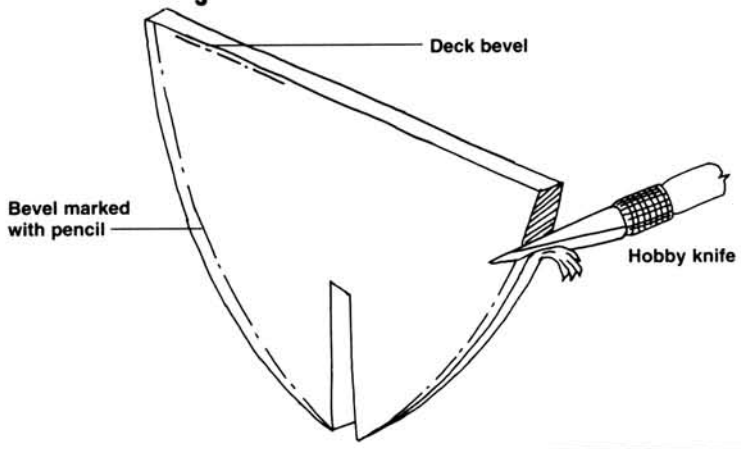


FIG. 4 – Bevelling the Bulkheads



4. Installing the Keel/Stem & Sternpost

The ship has no real point of change between the keel and stem, so we will call it a keel/stem. The laser-cut keel/stem, and sternpost can now be added. Taper the keel/stem according to the plans before gluing in place or do it later. Dowels can be used to help align and hold the pieces. Remove any glue squeeze-out from the rabbet before it sets (see figure 3).

An Option: If you like, you can glue the sternpost and keel/stem onto the center keel before cutting the rabbet. This makes cutting the rabbet a little more difficult, but on the other hand, it makes the installation of the sternpost and keel/stem easier since there is more gluing surface.

5. Installing the Bulkheads

The bulkheads are labeled "A" through "M". Compare the laser-cut bulkheads with the plans to determine which is which, and label each bulkhead. Check each bulkhead to make sure it will slide into the center keel slots. Machine tolerances during laser cutting may provide a too tight fit. Sand the slots, if necessary, until the bulkheads slip on. The fit should be snug, allowing a little tolerance for glue.

On each bulkhead, mark the location of the WL reference lines in pencil. This mark should line up with the WL mark on the center keel. It will assure that the hull form is accurate and that each bulkhead is correctly related to the others. There are two WL marks. One is for Bulkhead "A" through "L", and the other is a higher mark for Bulkhead "M".

Next, mark the bevels on the bulkheads. Use a tick strip to transfer the bevel line as shown on the plans, or cut the bulkhead patterns from the plan and glue onto the bulkheads. You can also lay the pattern over the bulkhead and use a pin prick to locate the bevel. Cut the bevels with a #11 blade as shown (see figure 4).

Some of the bevels are very slight, especially the deck bevels and the side bevels near amidships. These can be sanded after the bulkheads are installed instead of pre-cutting them.

Glue the bulkheads in place, making sure that the WL marks on the bulkheads and the center keel line up. Use a square to make each bulkhead perpendicular to the center keel, then tack a temporary strip to the top to hold the bulkhead in place while the glue dries (see figure 5).

After all bulkheads are in place, tack a temporary batten on each side of the hull just below the deck as shown. (see figure 6). This is a critical step. Measure the spacing between bulkheads and retack the battens until the hull is aligned. Even though the center keel was assembled flat, it could warp out of line. The result could be that you end up with a banana-shaped hull. Check the spacing between bulkheads, and the port against starboard spacing. Look at the the hull to see if it is properly aligned.

When you are satisfied that the hull is aligned, check to see that the bottom of each bulkhead feathers out and lies precisely on the bearding line. Trim as necessary to line up. Also, check to make sure that the top of each bulkhead at the centerline is flush or slightly higher than the center keel. Since all alignment is based on the WL marks, there could be some slight errors. If the center keel is below the top of the bulkheads, that's OK. If above, trim the center keel until it is flush with the bulkheads (see Figure 7).

FIG. 5 – Squaring the Bulkheads

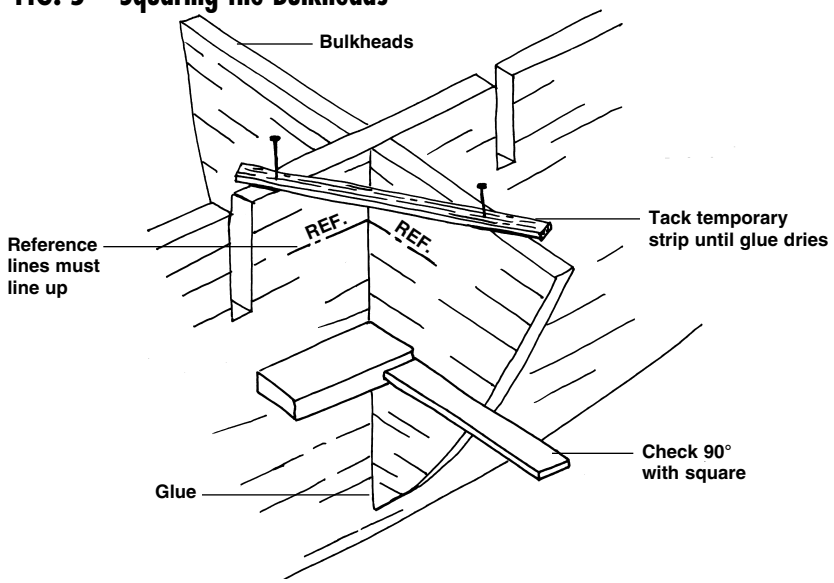


FIG. 6 – Applying Battens

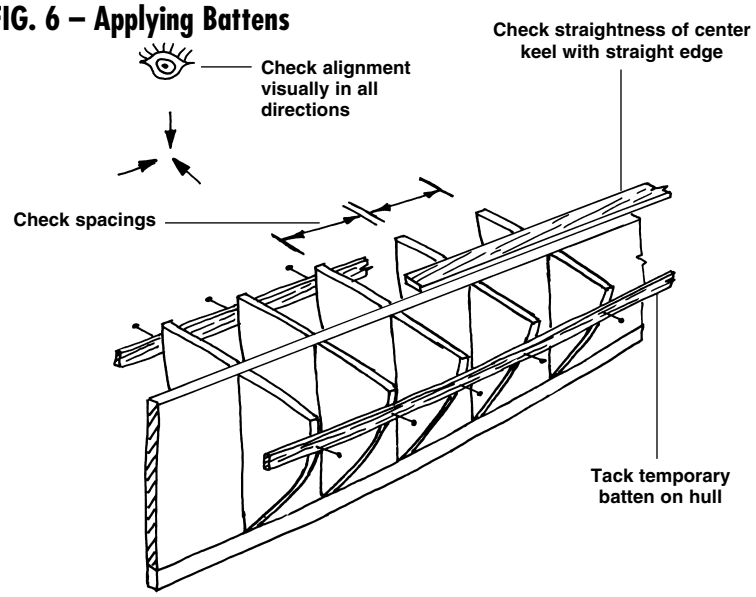
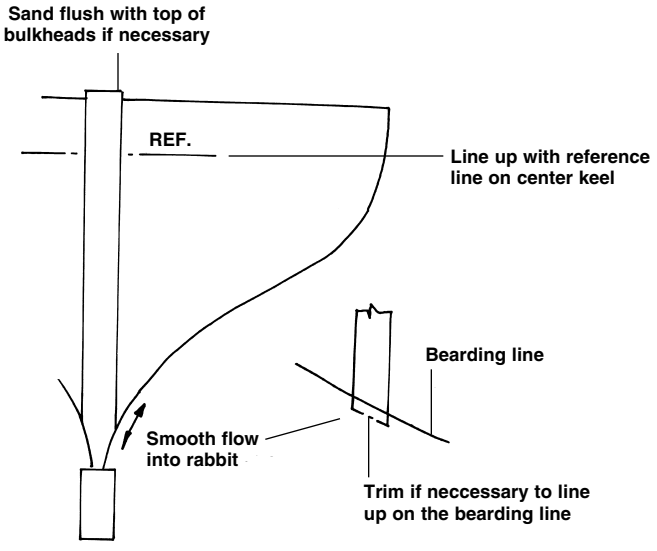

Check straightness of center keel with straight edge
Check alignment visually in all directions
Check spacings
Tack temporary batten on hull

FIG. 7 – Aligning the Bulkheads


Sand flush with top of bulkheads if necessary
REF.
Line up with reference line on center keel
Bearding line
Smooth flow into rabbit
Trim if neccessary to line up on the bearding line

Next, check the fairness of the hull form and sand in the slight bevels that were not pre-cut. To do this, use a stiff basswood batten about 3/32" thick and lay it across the bulkhead edges and deck in various locations (see figure 8). If not fair, sand the bevels that stick out, or add shim material if there are dips. This is an important check. The planks must lie flat against the bulkheads without incurring any bumps and dips on the surface. A model like the *Pride of Baltimore II* has many bulkheads, so it is possible for manufacturing or assembly errors to creep in.

Critical Area: Planks from Bulkhead "K" to the sternpost rabbet take a severe bend. The bevel on Bulkhead "L" is critical. Check this area thoroughly so a batten curves smoothly from "K" over "L" and into the sternpost rabbet. Trim "L" if necessary. This area will require steam-bending. Otherwise, the planks may break or buckle as they pass over Bulkhead "L".

Option: To avoid the possibility of a break at "L", you could fill the space from bulkhead "L" to the rabbet with a solid wood block, carved to the hull curvature.

6. Installing the Transom Framing

The transom framing is composed of a filler block port and starboard that is glued to the aft side of Bulkhead "M" and to the center keel. On top of the blocks you will glue six laser-cut inboard knees and two outboard knees. The outboard knees should slope inboard and curve on the outboard side to catch the bulwark planking which will require a lot of tumblehome aft near the transom.

First, carve the two rectangular blocks provided in the kit in accordance with the plans (see also figure 9). The top will need to be curved to the deck camber. The aft side of the blocks indicate the slope and curvature of the transom, and the counter below should be a curve, but straight across. Note that the front of each block will be exactly the same as the aft side of Bulkhead "M".

Add the laser-cut frame knees atop the carved blocks (see figure 10). The inboard knees are straight, but the outboard knees must be sanded to the hull curvature. The transom will be planked later. For now, you may want to tack a strip along the top of the knees so you won't accidentally break them off as you proceed.

7. Covering the Mast Slots

On both sides of the mast slots in the center keel, add the pieces shown on the P-O-B plan. Cut from scrap wood. Glue them securely, because you can't get to them after the decking is installed. The mast slots are slightly larger than the actual mast. The mast will be wedged in the hole when installed.

8. Installing the Plankshеer & Bulwark Stanchions

The *Pride of Baltimore II* has a single plankshеer (or call it a waterway). Inboard of the plankshеer is a nibbing strake running parallel to the plankshеer. The plankshеer is provided laser-cut with holes for each bulwark stanchion. The plankshеer is 1/16" thick like the deck planks. On the real ship, the plankshеer is slightly thicker than the deck planks (about 3/8" to 1/2") but at 3/16" model scale this variance is not necessary. The plankshеer will be painted, so the difference will not be seen.

FIG. 8 – Fairing the Hull Form

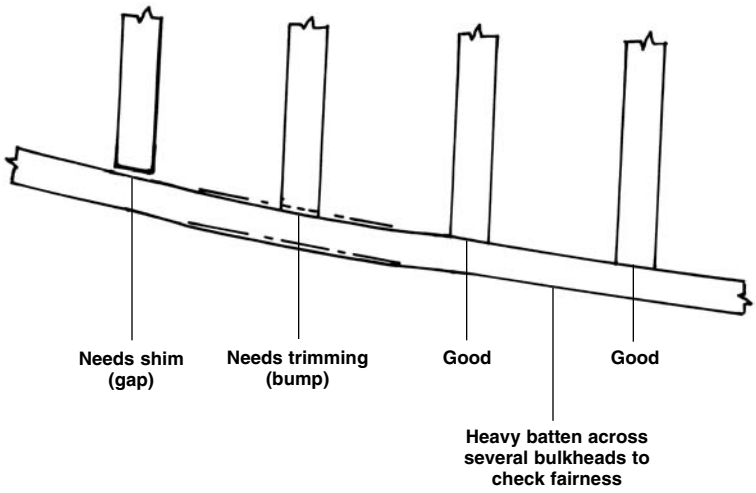


FIG. 9 – Installing the Transom Framing

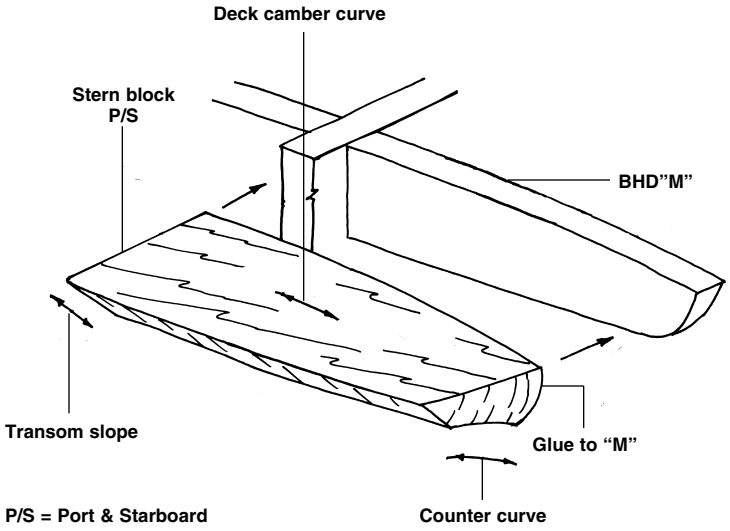
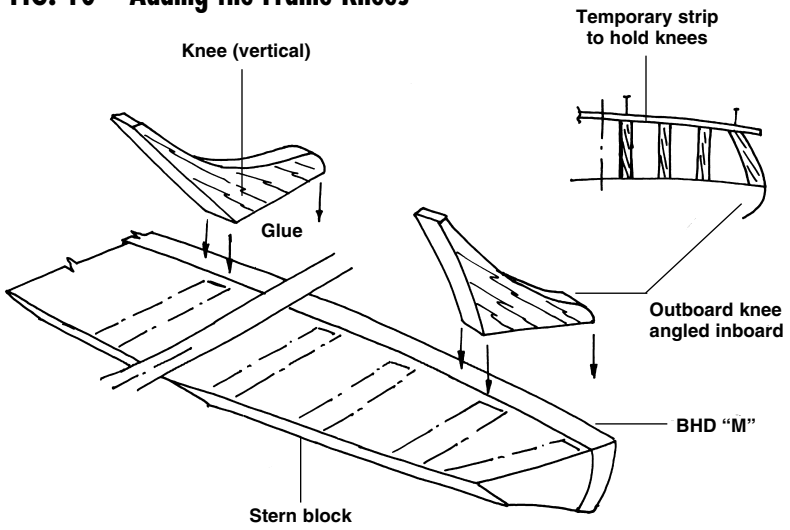


FIG. 10 – Adding the Frame Knees



Glue the two-piece planksheer together, then glue it to the top of the bulkheads, port and starboard. The planksheer should extend beyond the edge of the bulkheads by 3/32". After the hull planking is added, the planksheer will protrude out from the planks by 1/32".

The planksheer across the stern must be fitted between the stern knees as shown on the plans.

The bulwark stanchions on the real ship are not extensions of the hull frames, but separate timbers set between frames. For the model, you will proceed in a similar manner except that the stanchions will go only to the bottom of the planksheer. The stanchions are provided laser-cut in the kit. Notice that the stanchion at the cathead is 1/8" wide while all others are 3/32". If for some unknown reason this particular stanchion was laser-cut like the others, simply add a piece of 1/32" sheet to the side to make the stanchion 1/8" wide.

The trick now is to install the bulwark stanchions so that they are properly angled and follow the hull form. Using the Hull Planking Layout drawing as a guide, and also paying attention to the shape of the bulkheads, install and glue a bulwark stanchion about every three or four inches. Check the angle and make sure it is exact. Next, insert the remaining stanchions in the planksheer holes, but before gluing these in place, add the inboard stringer at the top of the stanchions. This stringer will act as a guide for fairing the other stanchions. You may need to put some temporary strips between the port and starboard stringer to hold them to the correct shape. When satisfied with the alignment, add a touch of super glue at each stanchion to secure them in the holes (see figure 11).

A stringer is also required at the inboard top of the stern knees. Glue this on at this time.

Notice on the plans that each stanchion has chamfered edges on the inboard side. At 3/16" scale, it may be overkill to try to add these chamfers on the model. They would be more effective if the stanchions were made from a harder wood, such as cherry, and the scale were a little larger.

9. Installing the Hawse Timbers

The hawse timbers will be glued to the top of the planksheer. Fit the hawse timbers as shown on the plans (see also figure 12). Drill the hawse holes through the lower section as shown.

10. Installing the Main Rail

Cut the main rail from 3/64" x 1/2"-wide stock provided in the kit and according to the plans. Use several scarf joints in the main rail. Cut each section so the grain of the wood follows the rail. Fit the rail carefully on top of the bulwark stanchions. Drill some holes for alignment pins or dowels before gluing as shown (see figure 13).

Most of the basic framing is now complete and you will begin the planking next. First, take a moment to look over what you have done so far. Re-check the fairness of the hull. Making corrections now will allow the planking process go smoothly.

FIG. 11 – Installing the Bulwark Stanchions

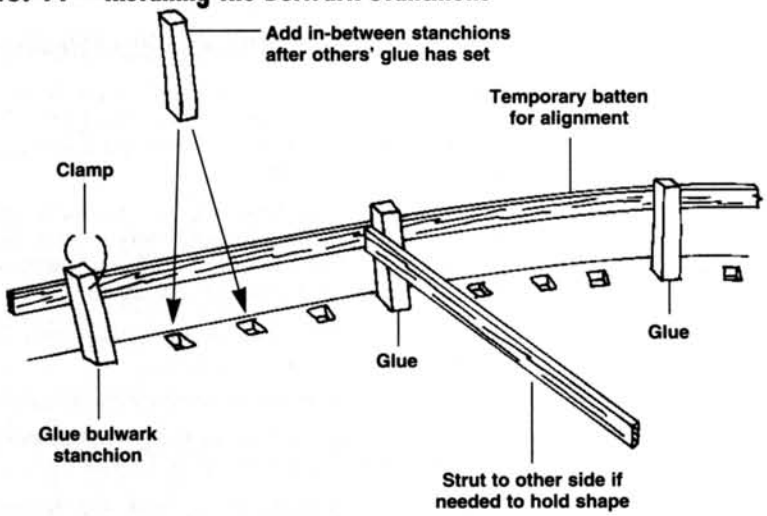


FIG. 12 – Installing the Hawse Timbers

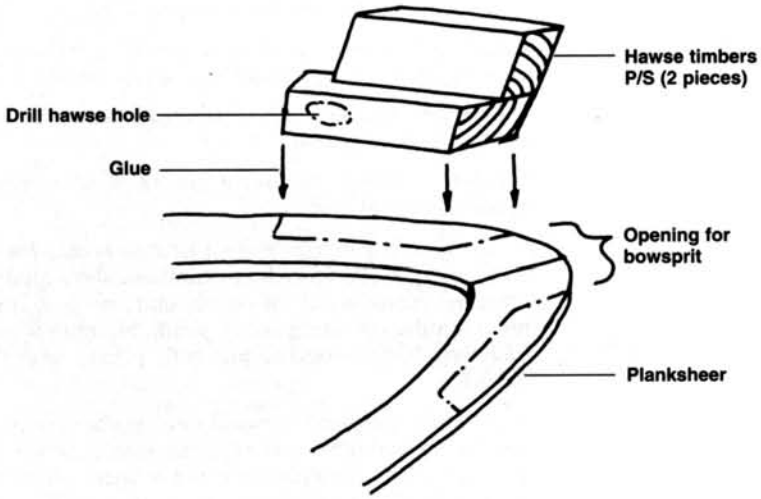
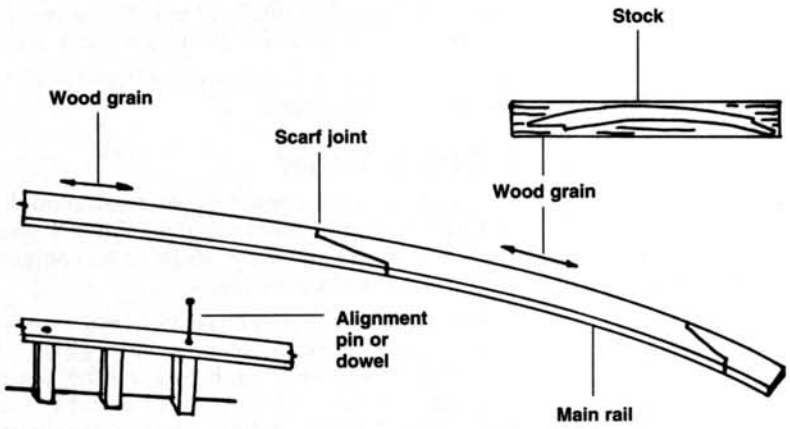


FIG. 13 – Installing the Main Rail



STAGE B

PLANKING THE PLANK-ON-BULKHEAD HULL

Before getting started, it is a good idea to know some of the more common shipbuilding terms that apply to the planking process. Consider the following few key words as you work:

1. A *plank* is a single length of wood used for planking a hull or deck. A planking *strake* is a continuous line of planks, butted end to end from bow to stern, or wherever the strake begins and ends.

2. A *garboard* strake is that strake of planking adjacent to the keel.

3. The *sheer* strake is the uppermost main hull strake.

4. The *wale* is a heavy layer of strakes below the sheer strake along the length of the hull's side.

5. When discussing planking *belts*, we are talking about a group of planks along the hull. Belts are laid out using *battens*, which are temporary strips of flexible wood used to locate the belt. A *ribband* is also a batten, used on boats and ships to hold the frames in place while the planking is being added. Ribbands are removed as the planking is completed.

6. *Spiling* is a term used to describe a process for marking and cutting a plank to a given shape.

7. *Edge-bending*, also called *springing*, is when you bend a plank edgewise.

8. When planking, the use of the word *fair* refers to smooth, gradual curves.

9. *Nib* or *nibbing* is where one plank runs into another at a sharp angle. In order to eliminate the feathered edge, the plank is cut off on the end and it is fitted into a similar cut in the other plank. Nibbing is generally applied to decks, but hull planks are also nibbed.

10. A *stealer* is a plank inserted into another plank, or notched in between two adjacent planks when the spacing between the planks gets too wide. Or, when two planks are tapering toward a narrow end, it may be necessary to cut off both planks, then substitute a wider plank to continue so there will be enough wood left for fastening the end of the plank. I'm at a loss for the proper term for this. One model publication calls it a *joggle* plank, but I'm not sure about that. Stealer is a common term , but joggle plank is not.

11. The *counter* is the underside of the overhanging portion of a ship's stern.

1. Getting Started

The planking process is tedious and you should plan on spending some time doing the job. Work on each plank as a project unto itself. Rushing will only result in frustration and a poor result.

Since both sides of the hull will be identical, you can cut two planks the same shape at once. Fit the plank on one side, then the other. Before starting, place the hull upside down and secure it in a vise or cradle. Something portable would be ideal so you can rotate the hull easily.

2. Planking Battens & Belts

It is easier to plank a hull by first dividing the hull into a series of "belts". The belts flow along the hull in smooth curves. Each belt is designed so the planks lay against the hull without having to excessively edge bend them. They sweep up at the ends like the deck sheer. Within each belt, the planks are usually spaced evenly, tapered, and fitted as required. The belts help accomplish the planking job without accumulating errors as you work.

When selecting a belt width and the number of planks within each belt, you need to consider how the planks will lay against the frames and how they will taper. If the planks are too wide, they will not lay flat on the bulkheads. Also, you don't want them to taper so much that there is no width left for fasteners. This would require substituting a larger plank for two to increase width. Also, in some areas, the planks may get wider rather than taper. If they get too wide, a stealer plank must be cut into the plank. While these alterations are acceptable and are used on many ships, it is best to design the run of planking to limit the number of such inserts (see figure 14 which illustrates some of these inserts).

For the *Pride of Baltimore II* model, a planking layout has already been developed for you. The layout is taken from the actual ship and is shown on the P-O-B plans. The belts are not necessarily related to how the real ship was planked, but were selected for the convenience of the model maker. The real ship planking has been followed as closely as possible and was based on photographs and several key measurements of planking widths. Stealers have been placed where they were found on the real ship.

3. Planking Butts

Before you start, consider the planking butts. Since the lengths of wood cut from trees are generally shorter than the overall lengths of real ships, shipbuilders generally have to work with planks only 20 or 30 feet long. Some modelers think it is easier to use a plank length the full length of the model. Fake butts can be scribed in later or omitted. Granted, this can be done. It's really up to the modeler. By using shorter pieces, however, there are some advantages. Since all planks taper to some degree, using the shorter piece will let you mark the taper quick, and the plank will be easier to fasten in place. And with a short piece, only one hand is necessary to hold it down. Also, if you make a mistake, you only have a small piece to do over. So, the following is based on the use of the shorter lengths.

Planking butts will not be exactly like the real ship. Because the model is designed to be built on the bulkhead system, no attempt was made to identify all the butts,so a deviation from the real ship planking butts was necessary.

A plank length approximately 6 inches will cover four bulkhead spaces. This is a comfortable length to handle for this model. To scale, it is a plank 32 feet long. However, to avoid having very short pieces at the bow and stern, you may need to use a longer plank to complete the run.

To follow real ship rules, you should stagger the butts on the model (see figure 15 for a sequence that is similar to that of a real ship). The stagger also applies to the deck planking. The 6-inch long plank works well with the rules. With this length you can meet the rule for three full plank-widths between butts on a single frame. If you use a plank length to cover only three bulkhead spacings, this would not be possible. Since the butts occur on bulkheads, you would wind up with only two full planks between the butts.

4. Spiling

Edge-bending planks on a real ship is done, but it is limited. The wood is very stiff, so many planks must be cut to shape. Spiling is the term used for laying out the cuts (see figure 16). It's simply a matter of transferring curves to a straight plank, then sawing the plank to shape. For the *Pride of Baltimore II* model, the wide planks landing at the sternpost should be the only strakes you need to spile. For narrow planks, the basswood strips are flexible enough so they can be edge-bent in place.

5. Fastening the Planks

There are some fancy plank clamps on the market, but they are more trouble than they are worth. They must be screwed into the edge of the bulkheads, leaving big holes to contend with when doing subsequent planks. With short pieces, you can hold or pin the planks in place. Be careful not to split the plank with the pins. If necessary, drill a small pilot hole first. Glue each plank to the bulkheads, and edge-glue them together. For the edges, use white or carpenter's wood glue so that setting will not occur too fast. At the bulkheads, it is good to use thin super glue to quickly secure the plank in place. Be careful not to glue your fingers.

While glue alone will hold the planks, you may wish to use small brass brads or wooden treenails for additional holding power, or just for looks. Using fine brass brads, cut off and discard the heads, then hammer them into place. If treenails are desired, you can buy them commercially. Better yet, get some long bamboo skewer sticks, strip off small pieces, then pull them through a draw plate until you have very small dowels. Drill holes for the treenails, add a touch of glue, and drive them into place. Treenails are good if you want to add them for each frame. While there are no frames, only bulkheads, use the bulwark stanchions for locating where a frame would be.

6. Planking the Outer Hull

Belt Layout: Now the fun begins! The hull is divided as follows: a single strake below the plankshеer, a wale below that strake, then four belts A through D. The wale is a thick band of planking which cannot be varied from the real ship. The lower planking, on the other hand, could be slightly different and would not be noticed. The wale will be painted a light color.

From the Hull Planking Layout drawing, use a tick strip along each bulkhead location and mark the wale location and the belt seams below. Using a tick strip, transfer the location of the seams on each bulkhead and mark them with a pencil. Now, using 1/16" x 3/32" temporary basswood battens, lay the battens along the marks and temporarily tack them in place.

The purpose of the battens is to assure an accurate flow of the planking belts. Although the Hull Planking Layout was developed to provide an accurate flow of belts, errors in drafting and tick strip marking and transferring may occur. With the battens actually in place, these errors can be corrected.
With all the battens in place, visually check their flow. Look at the model from the side and from the bow and stern. Do the battens have nice smooth curves? Adjust the battens if necessary (see figure 17). The plans show what they should look like from the side and ends. When everything seems okay, remark the belt seam lines on the bulkheads, making sure they are clearly indicated. You do not want to

FIG. 14 – Stealer Inserts

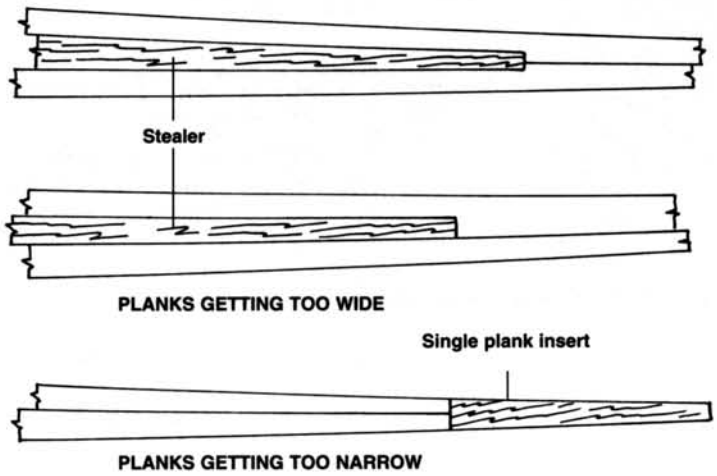


FIG. 15 – Staggering the Butts

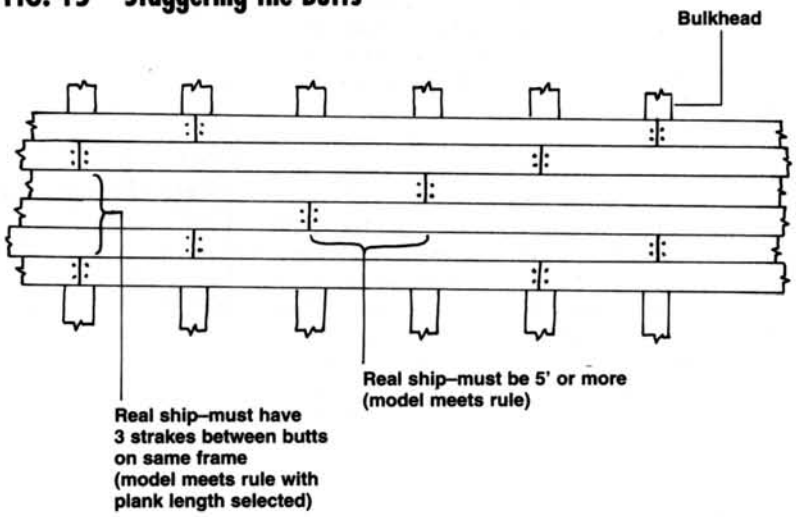


FIG. 16 – Spiling (or Laying Out the Cuts)

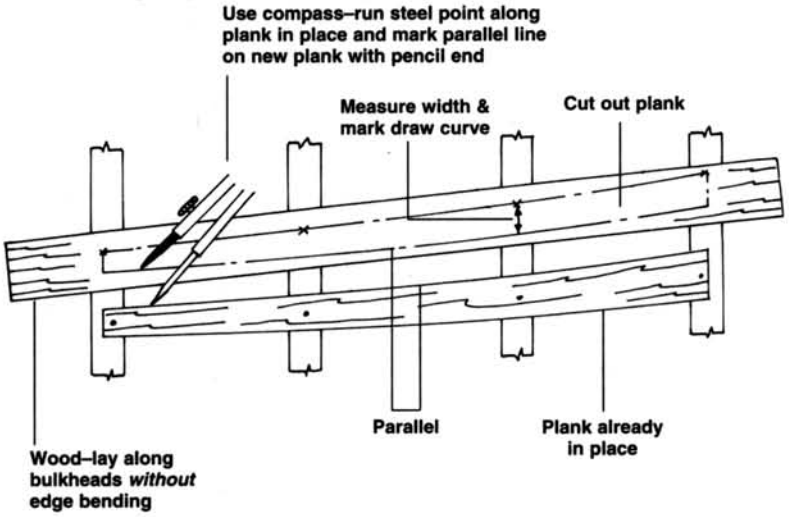
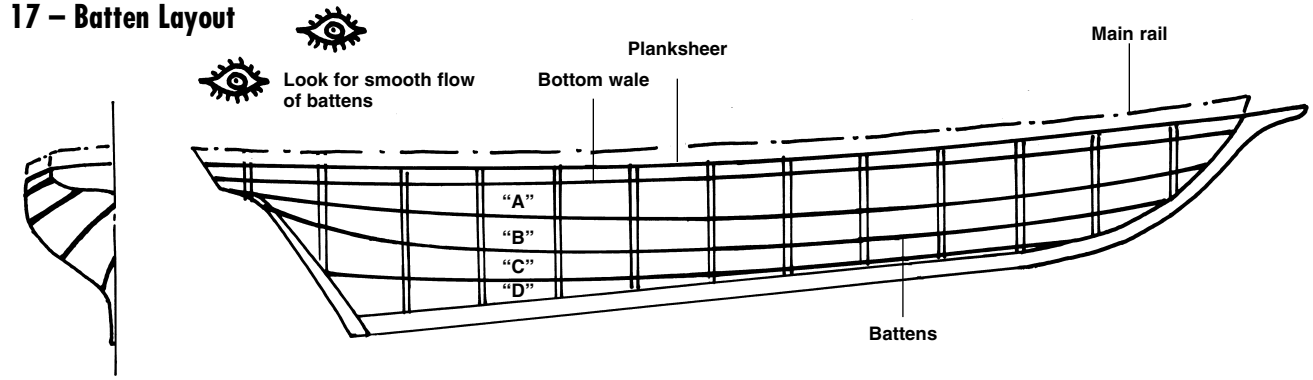


FIG. 17 – Batten Layout



lose them. You could now remove the temporary battens or leave them in place until they need to be removed in order to add a plank.

Sloping Plank Edges: As you proceed with the planking, you may need to slope the edges of a particular plank so it butts flush against the adjacent plank. This is especially true for a plank adjacent to another member intersecting at an angle. For example, the first plank below the plankshеer at the bow butts against the plankshеer at an angle. The edges of these planks must be trimmed so they fit against the plankshеer (see figure 18).

To begin with, all of the planks on the hull have square edges. When butted against each other on a round hull form, a small gap will appear between each plank. Most of the gaps eventually will be filled with glue, or you can fill them with wood filler. On a real ship, the gaps are caulked. In fact, the edges of the planks are often sloped to increase gapping. This measure assures that the inside of the planks butt against each other, while on the outside there are sufficient gaps for caulking. If you want a perfectly smooth hull without the gapping, you must trim the edge of each plank as you fit it. It's a lot of work, but your decision.

First strake below the plankshеer: This is a single strake that is 1/16″ thick by 3/32″ wide from bow to stern. You will not taper it. Edge-cut the plank so it fits flush to the underside of the plankshеer. Note that at the bow, the wale rides up to the plankshеer. Run the plank forward, then when doing the wale, just add a doubler over the plank so that it will be the same thickness as the wale (see figure 19).

Wale: The wale is made up of three planks that are 3/32″ thick. The planks will need to taper toward the stern since the overall wale should taper. Make each plank equal in width. On the real ship the wale is thicker than the hull planking, but not quite as much as you will get using a 1/16″ hull plank and a 3/32″ wale plank (a 2″ difference on the real ship). If you desire, sand the wale down a little so it is not so thick. At this model scale, however, it is probably not necessary.

The aft end of the wale and the counter planks intersect in a miter joint. See the expanded counter view on P-O-B plan sheet 2.

FIG. 18 – Sloping the Plank Edges

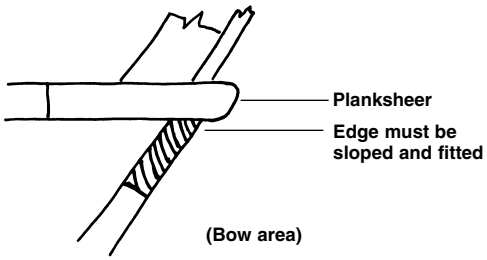


FIG. 19 – First Strake Below the Plankshеer

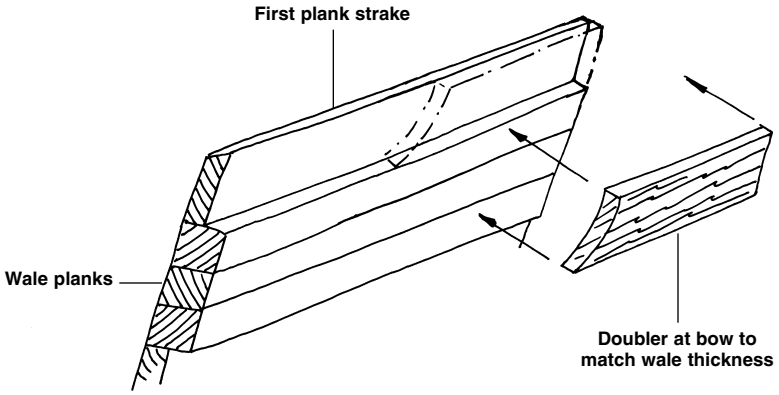
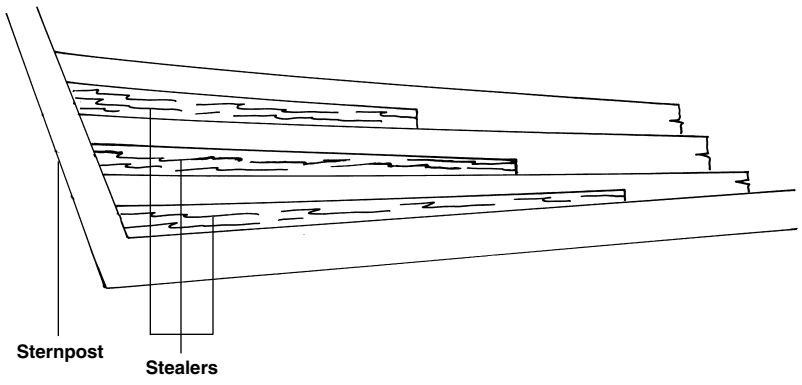
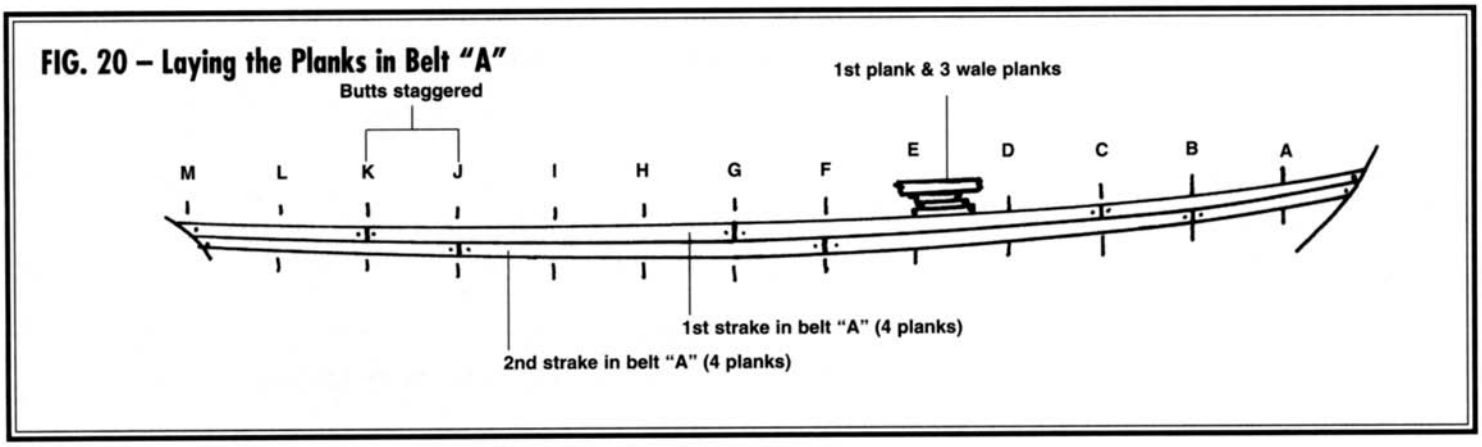


FIG. 21 – Stealers in Belt D





Laying the Planks in Belt A: Each belt of planking should be done separately. Consequently, you can start with any belt. For discussion, let's start at the top and work down. **Belt A** has six 1/16"–thick plank strakes below the wale. The maximum plank width is at **Bulkhead G** and is roughly a 9" real ship width (a little over 1/8" model scale). The planks should taper both forward and aft to about 3/32". On the real ship, the planks taper to no less than 5-1/2". Use the 1/16" x 3/16" strips for the planking in this belt.

Use a tick strip and lift the plank widths from the Hull Planking Layout on Sheet 2. If you have changed the locations of the battens, simply divide the space into six equal plank widths at each bulkhead. A set of proportional dividers would help. Mark these lines on the bulkheads with a pencil. You will then have a completely marked area for **Belt A**.

The next step is to cut planks to fit between the marks. **Belt A** will not require spiling, so a straight tapered plank can be made. Start at **Bulkhead G**. Use four planks, one from **Bulkhead G** to **Bulkhead K**, another from **K** to the transom, **Bulkhead G** to **Bulkhead C**, and **Bulkhead C** to the stem. First, lay a piece of planking material over the bulkheads and mark the length. Mark the plank in pencil at each of the bulkheads. Next, use a set of dividers or a tick strip and lift the plank widths from the marks on the bulkheads and transfer to the plank. Draw a line through the points and cut the plank. You now have a tapered plank. Trace this plank to obtain another one for the other side of the hull.

Install the planks on the hull, butting them up against the wale. Then, do the same process for the next strake below. Stagger the butts for this strake. Install a plank from **Bulkhead F** to **B**, **B** to the stem, **F** to **J**, and **J** to the transom. You should have four planks making up each strake from bow to stern (see figure 20).

At the stern, some planks will need to be twisted into place. You may need to steam bend the twist if it is severe.

Now move down to the next planking strake and work it the same way as you did the previous one. Stagger the plank butts, starting at **Bulkhead E**. Continue until this strake is finished, then complete the strakes in **Belt A**.

For now, let the aft ends of the planks that rest on the counter extend just beyond the counter. When you plank the counter, the counter and hull planks should meet in a miter like the wale noted previously.

Laying the Planks in Belt B: This belt is very similar to **Belt A**. It has six plank strakes about the same width as those in **Belt A**. If you have not removed the temporary batten, do it now. Then you may start the process for **Belt B**. Remember to stagger the butts.

Laying the Planks in Belt C: This belt is also similar to **Belt A** except that the planks do not get tapered as abruptly at the stern. Also, there are seven, rather than six, strakes. As mentioned when you were checking the fairness of the bulkheads, the area near the sternpost takes a severe bend. Steam-bending this area is essential, otherwise the planks may break or knuckle as you lay them over **Bulkhead L**. You can also use the filler block as an option.

Laying the Planks in Belt D: This belt will contain the garboard strake (next to the keel) and two other strakes. It will also contain three stealers in order to reduce the width aft as shown (see figure 21). All the planks in this belt will be very wide (about 13" full-ship size) and must be spiled. You will need to use the wide planking strips provided in the kit. There will also be some severe twist to the forward part of the planks. The twist should be steam-bent.
Toward the bow, the planks will feather out at the rabbet rather sharply. This is fine for the model, but on the real *Pride of Baltimore II*, four of the lower planks have nibs in them as shown (see figure 22). You may do this if you desire.

P-O-B plan sheet 2 has a complete planking profile as shown. Use this drawing to determine the plank widths in **Belt D**. The sections, Hull Planking Layout drawing , cannot show all the planks aft so the profile view is necessary.

Plank Variations within a Belt: Suppose you are working within a belt, and have five planks the same width, and then find that the last plank in the belt needs to be made slightly wider to complete the belt...should you worry? Certainly not. No planking job, even on real ships, is that precise. You are dealing with hand-cut planks. The important thing is to keep the flow of planks smooth. A variation in widths is of no great concern. Even though this kit tries to duplicate the planking on the real *Pride of Baltimore II*, you must be realistic. There are going to be some slight variances as you proceed.

7. Planking the Transom & Counter

For the model, the side hull planks can be extended past the counter (bottom curved portion of the stern overhang), and the 1/16″-thick counter planks butted into the hull planks or vice versa. On the real ship, however, the counter plank meets the hull plank in a miter joint. If you elect to do this, first cut the ends of the hull plank that you left hanging over, then add the counter planks. Cut the miter on each plank, then glue them in place (see figure 23). You could also cut the miter as you add each side plank.

Add a strip to the upper edge of the counter planking so it covers the end grain. Round this edge like the molding above it.

Plank the outside of the transom with 1/32″-thick planks (see figure 24). The section below the molding strip can be made from 1/32″-wide material. On the real ship, the upper part is mahogany and the planks can be seen. The lower section should either be planked or you may use a wide sheet (It was not possible to decipher this detail from photographs taken of the transom). Over top of the 1/32″ planks, add the 1/32″-thick fancy piece and the molding strip. Leave a little gap in the upper horizontal molding for inserting the Maryland flag emblem.

The inside of the transom will not be planked, so make sure you remove any glue squeeze-out between the outer plank seams and along the stern knees.

8. Planking the Bulwarks

The planks between the plankshеer and main rail will be in two thicknesses. There are five planks that are 1/32″-thick, and a 3/64″-thick plank at the top. Check the width of the inboard stringer, the head of the bulwark stanchions, and the outboard thick strake. The total width must be correct since these pieces must fit under the main rail. If any one part is oversize it won't fit. You should not have to make the rail wider to cover a mistake. The rail would look bulky and be out of scale.

The bulwark planks are fairly uniform and will not require any severe tapering forward or aft. If you do not want to use the five planks, you may use only two, or even a solid piece. The real ship, however, was planked as described. Simplification is up to you and it is certainly justified if you intend to paint the model.

As you plank the bulwarks, remember that there will be no planking inboard so you should clean up any glue squeeze-out on the inside as you plank. If left to harden, it would be difficult to remove.

Note that there will be a continuous scupper along the side, so the lowest bulwark plank should not touch the plankshеer from gunport 2 to 5 (see figure 25). There is a real ship gap of 1″ at the deck. For the model, you could cheat a little and use about a 1/32″ gap rather than 1/64″ so it shows up better. Forward and aft of the two gunports, small drilled scuppers are used.

FIG. 22 – Nibbing the Lower Bow Planks

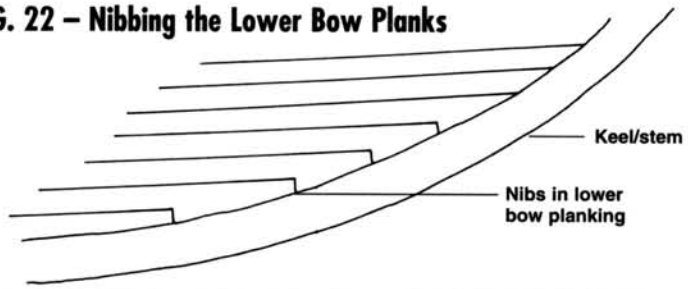
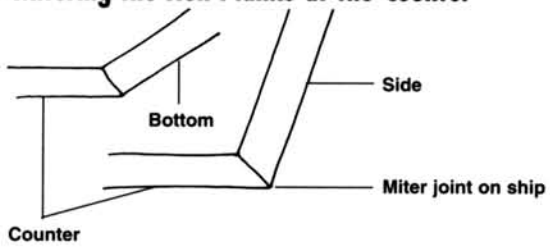
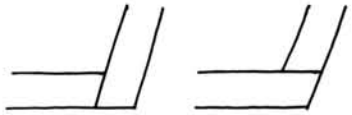


FIG. 23 – Mitering the Hull Planks at the Counter



SHIP INTERSECTIONS AT STERN



MODEL OPTIONS

FIG. 24 – Planking the Outer Transom

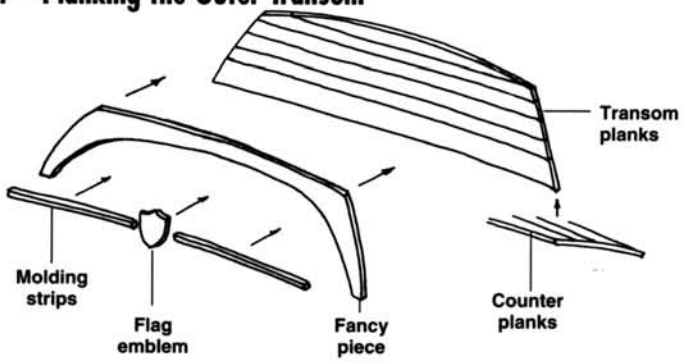
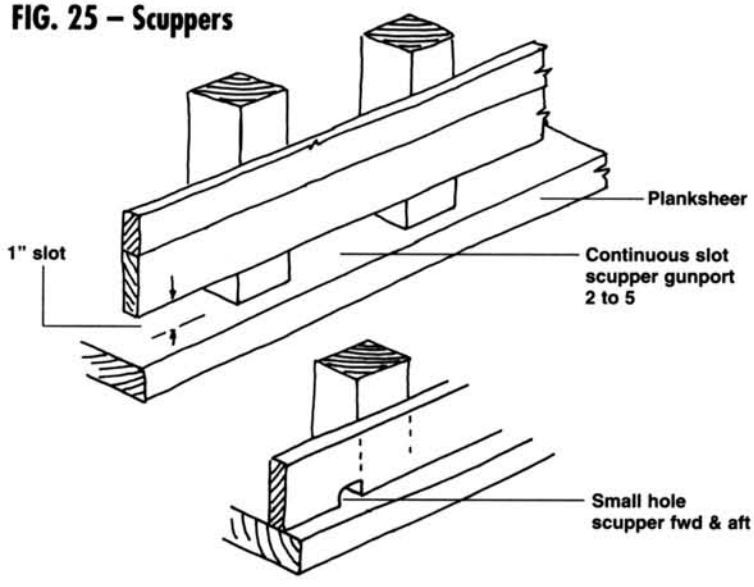


FIG. 25 – Scuppers



The top 3/64" plank should continue across the gunports. Apply a 1/32"-square vertical strip of wood on each side of the gunport, simply to cover the end grain of the bulwark plank (you could omit this on the model).

Next, fit a fashion piece on each side of the transom as shown (see figure 26).

9. Planking the Deck

Hatch & Trunk Coamings: Before planking the deck, you must decide how you want to treat the hatch and trunk coamings. A recommended approach for doing it the way it was done on the real ship, is to install all coamings first. You can then plank around the coamings. This saves some planking work and material. On the underside of the coamings, insert some scrap wood so the deck planks have support for gluing (see figure 27).

If you elect not to install the coamings now, they must be included in the construction of the hatches and trunks and glued down on top of the deck.

Deck Planks: The deck planks should be 1/16" thick x 3/32" wide except for a 1/16" x 3/16" plank port and starboard at the centerline. On the real ship, the two center wide planks are just slightly thicker than the other planks. It is not necessary to indicate this variation in size at this 3/16" model scale.

Prepare the strips by painting one edge black or dark brown. When the planks are glued together, this will simulate caulking in the seams. You can also use a brown colored carpenter's wood glue on the edges of the planks. When dry, this glue is dark enough to simulate the caulking.

Thick Pads: There are some thick pads that must be put on the deck around the windlass (used on the real ship to take abrasion from the anchor chain). The pads are shown on the plans. Add these doublers on top of the deck planks.

Deck Inserts: As shown on the plans, there is an insert located under each of the fife rails. These inserts should be flush with the deck planking. You can add them as you plank the deck, or just omit them. The inserts are stained the same color as the fiferail so you could just stain the area rather than actually adding the insert.

Deck Planking Procedure: The deck planks should be laid parallel to the centerline. Start at the centerline and work outboard. The nibbing plank is a narrow plank running parallel with the planksheer. Cut the nibs into the edge of the planksheer as you go (see figure 28).

Scrape off any glue squeeze-out before going to the next plank. Planking butts can be used, like the outer hull, or they can be omitted. On the real ship, they do not show up as readily as the seams. You can also scribe butts after the planks are laid. Since there is no cutting or curves involved like there was with the hull planking, using long deck strips is no problem. Use brads or treenails if you like. See Hull Plank discussion.

FIG. 26 – Fitting the Fashion Pieces

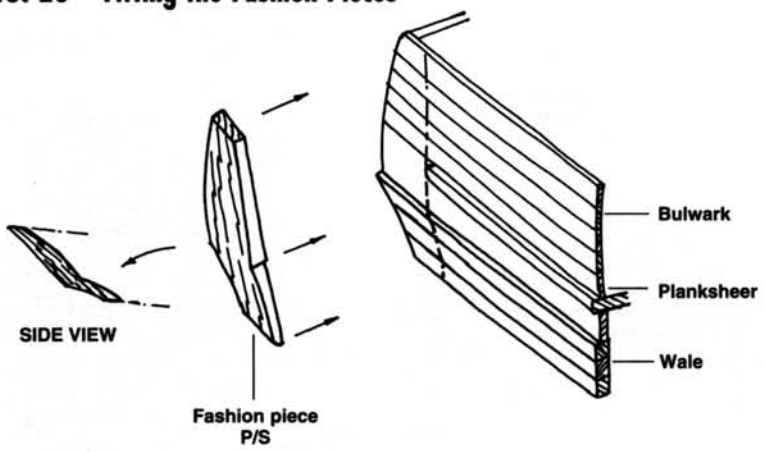


FIG. 27 – Hatch & Trunk Coamings

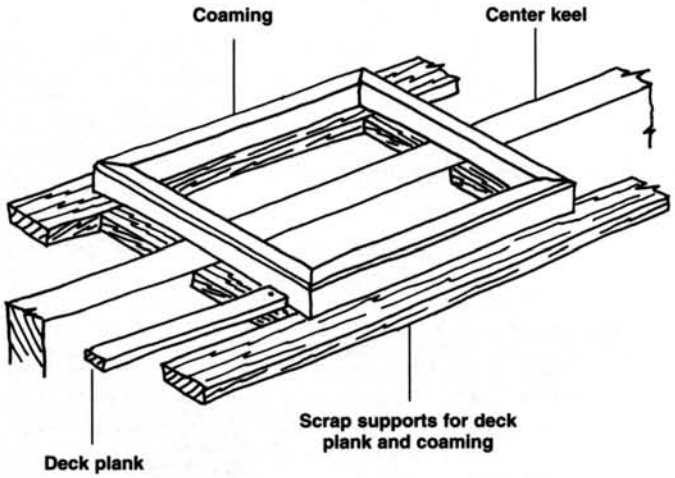


FIG. 28 – Nibbing the Planks at the Planksheer

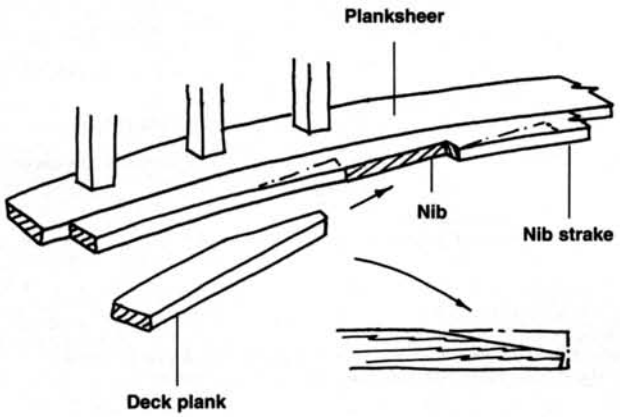


FIG. 29 – Gunport Lids & Interior Rail

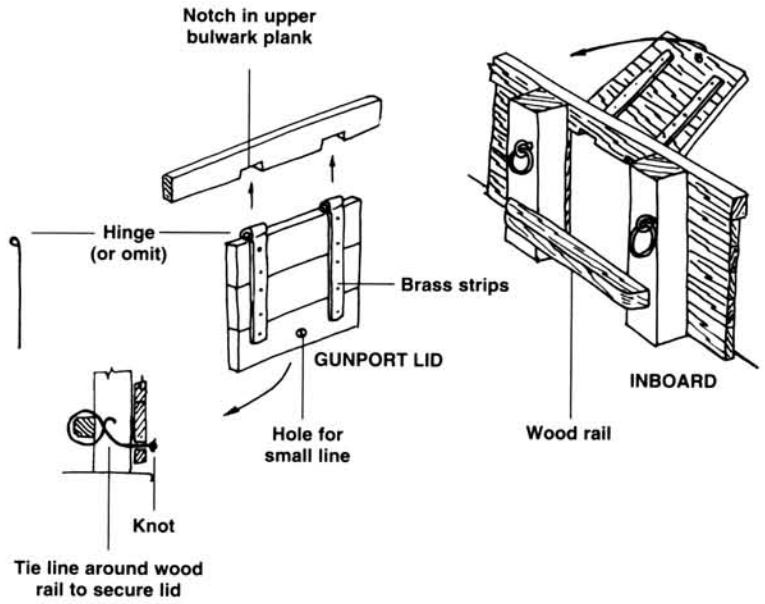
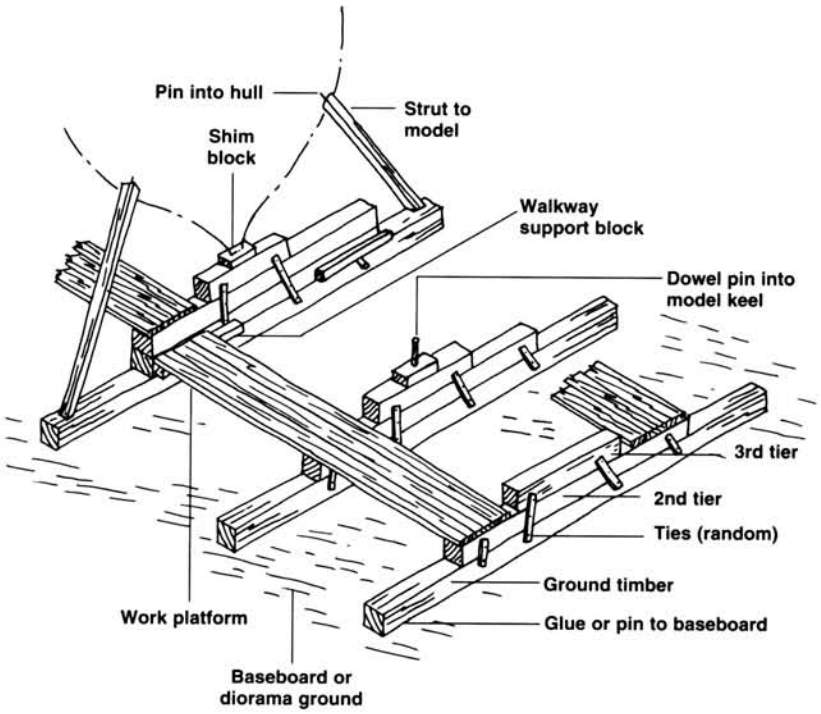


FIG. 30 – Building-Ways Mounting System



Note: Shim model so the load waterline is parallel with the baseboard. See plan sheet 3 for complete mounting plan and dimensions.

STAGE C

COMPLETING THE BASIC HULL STRUCTURE

1. Correcting & Sanding

After all the planks are installed, look over the entire hull. If you find seams with starved glue joints, rub some wood glue in the cracks and, if necessary, add some wood filler. When seams are filled, sand the entire hull and deck plank smooth.

2. Gunport Lids & Interior Rail

The gunport lids can be made now or you could add them later. Make the gunport lids from three planks, 1/32" thick, or you may use a solid piece. Make the hinge straps from brass strip. Inboard, add the small rail across the gun ports (see figure 29).

3. Swivel Gun Stocks

A swivel gun stock is a post with a hole in the top that guns can be set upon and pivoted. Some ships have several stocks along the bulwarks. There are two stocks on the *Pride of Baltimore II*, one port and one starboard. These stocks are shown on the outboard profile of the plans but are actually "fake" stocks (as shown). Each stock should stop just below the main rail. The swivel gun for each stock should be set into a hole in the center of the main rail both port and startboard (rather than in the top of the stock). This is interesting because Tom Gillmer's original design drawings show an actual stock extending above the rail with the swivel gun in the stock itself. This was just another change made during the building process.

Notch out the fake gun stocks to fit the hull shape along the plankshеer.

4. Natural Wood, Double Plank Option

Most wooden ships have single-thickness planking, as does the *Pride of Baltimore II*. Furthermore, the kit is intended to be painted the colors of the real ship. Many modelers, however, are familiar with the European double-planked kits, or want to have a natural wood tone finish on the hull, typical of the Admiralty type models. Also, after the planking job is completed, some modeler's wish to try again to improve the looks of the job. If this is your desire, you may double plank the model right over the basswood planking.

To complete the double planking task, thin wood strips in mahogany, walnut, and some other types of exotic hardwood can be purchased from Model Expo. For the *Pride of Baltimore II*, you will need 85 strips sized 0.5mm x 5mm x 20 inches long. This amount includes about 20 percent increase for waste and errors.

The natural wood planks will cover the existing planking, but you will still have a basswood plankshеer and main rail exposed. You could substitute these initially with the wood of your choice, cap them with the strips, or simply stain them to look similar.

When applying the strips, proceed exactly as you did for the basswood planking process. You may want to work with longer strips since the basswood planking already defines the plank shapes. Simply lift dimensions from the hull and cut the natural wood strips. When completed, sand and finish the hull with Floquil oil or glaze, or tung oil. Finally, add a coat of wax and then polish it.

STAGE D

MOUNTING THE HULL

Before continuing with additional work it is best to mount the hull. Doing this step will help prevent details from becoming damaged while you handle the model. It will also allow you to make any alignments that require a true waterline. So, proper mounting of the hull is very important. While any modeler can devise his own mounting, this kit contains a building-ways mounting system. A second option, which can be purchased separately, is a mounting board with two brass, or wooden, pedestals.

1. Building-Ways

The building-ways mounting system is mostly suitable for models without sails. The one contained in the kit is similar to the actual building-ways used for constructing the *Pride of Baltimore II* at Baltimore, Maryland's Inner Harbor.

You must drill the keel of the model in order to apply the rods that anchor the model to the ways. The building-ways are easily assembled, consisting primarily of 3/16" square stock, representing square timbers (see figure 30 for actual construction). The ways should be mounted on a baseboard sized approximately 24" x 9". The board must be purchased separately, or you may make your own. Expanding the size of the board will allow you to create a mini-diorama comprised of boat yard ground activity. At Inner Harbor, the lowest wide timbers were set directly on the ground.

2. Mounting Board with Two Pedestals

As an option, you can purchase two brass or wooden pedestals. You will need a 1" long and a 1-3/8" long pedestal, or any length with one about 3/8" longer than the other. If you own a router, or can borrow one, you will be able to cut a nice fancy edge on the baseboard if you do not purchase one commercially. Finish the base with a dark stain or paint.

If you decide to use the mounting board and pedestals, drill pilot holes in the keel and screw holes in the mounting board. Locate the pedestals so the load waterline is parallel to the mounting board. Plan sheet 3 shows the approximate location of the two optional pedestals. If something went awry and the balance is off, add a brass shim under one pedestal to correct it.

If you intend to put the model in a glass or plastic case, you could let the bottom of the case serve as a baseboard.

Note: It is recommended that either choice mounting piece be finished before mounting the Hull Assembly into place.

STAGE E

ADDING THE HULL DETAILS

1. Locating Deck Fittings & Structures

If you included the coamings when planking the deck, you at least have those structures located. Now it is time to locate all the other items that must be added: on the deck, inside bulwarks, and top of the rail; this includes items such as fife rails, bitts, windlass, deck prisms, binnacle, watertight steel hatch, steering wheel box, ship's boat cradles, ventilator boxes, mushroom vents, fire hydrants, bilge pumps, pin rails and belaying pin holes in the rail, eyebolts, cleats, catheads, lifelines and stanchions, swivel guns, and deck lockers. Outboard, you will locate the propeller struts, shaft log, channels, and eyebolts for bowsprit rigging, rudder preventer chains, and rudder pintles and gudgeons.

To locate items, measure from some known "bench mark" such as the center of a mast, the centerline, or outboard from the keel/sternpost intersection. The centerline has those two wide deck planks so it is easy to find. Mark all items lightly in pencil.

Fittings such as eyebolts and cleats associated mostly with rigging can wait until later. However, it is not a bad idea to get all these fittings installed while working on the deck. Get them done, then clean up and varnish the deck. Afterward, when you start the rigging, you will be glad all those fittings are ready.

2. Bow Fairlead

Make the fairlead at the bow from wood and drill the five holes for lines leading toward the bow pin rail platform. Paint the fairlead black.

3. Cabin Trunks

The crew berthing access trunk, main salon trunk, engine room trunk, and after cabin trunk are all similar in general construction, but the companionways, skylights, and other top details vary on each trunk. Follow the plans carefully and do not make any assumptions that one item looks like another.

The basic box for each trunk should be made from 3/64"-thick basswood. You could also use a solid block. The kit contains a chunk of basswood for this purpose (see figure 31 for the basic structure and how it fits upon the deck coamings). If you did not install coamings while installing the deck planking, the figure also shows the detail which must be made now.

The top of the main salon trunk and the after cabin trunk must be planked. The outboard wide plank and the fore and aft end planks on the real ship are mahogany, so on the model, they should be mahogany in color. The top planking within these planks on the real ship looks exactly like the main deck planking. It is Douglas fir with a weathered grey look, and you can see the caulking seams. The other trunks have all mahogany tops. With so many fixtures attached, you could use solid sheet wood for the top on the model.

All of the companionways, skylights, etc. can be made and just glued on the tops of the trunks. If you want to have any one of the companionways, or hinged covers open, you must cut out an opening in the top and do some detailing below.

Some details of the various components on the tops of the trunks are shown (see figure 32). Companionway slide rails and some of the other components must be 1/64" thick. Sand down the 1/32" stock supplied. You could also use 1/64" aircraft plywood, but as mentioned earlier, it will not stain the same as basswood, so you probably would get a mismatch in color.

4. Ventilator Boxes & Mushroom Vents

There are two ventilator boxes. One is a long box with doors on each end for storing miscellaneous gear. It vents the engine room. The smaller box was added since the ship was built and vents the salon. Make the boxes from strip wood or solid blocks similar to the cabin trunks. Britannia metal fittings are provided for the ventilator cowls. The vents are able to rotate so you may install them facing any direction on the model (see figure 33).

Notice that the boxes do not sit on a built-in coaming like the trunks and hatches. Instead, they are bolted on top of the deck. These boxes were added after the ship was built.

Two small mushroom vents are provided as Britannia fittings. One is in front of the steering wheel box and vents the lazarette (provision storeroom) below. The other one is alongside the bowsprit and vents the forepeak.

5. Binnacle

The binnacle is made from wood (see figure 34). The binnacle can be glued directly to the top of the deck and to the forward side of the hatch. The glass cover and compass are so small that detailing will be difficult. You could simply paint a black oval on top of the box. Also, you could cut out the oval and pour in some epoxy. The shiny epoxy would simulate a glass. The box also has a small metal gravity roll indicator on the aft side. This is also too small to model, but interesting to know about.

6. Steering Wheel & Box

The real ship steering wheel is a nice mahogany wheel with brass hub. The model kit wheel is a Britannia metal fitting that you will need to paint in order to simulate the colors. The wheel box can be made from the strip wood provided in the kit or you may wish to substitute a solid block. If you do, add sheeting on the top so it protrudes beyond the box (see figure 35). The real ship box has a removable top but this is not necessary on the model.

7. Hatches

There is a forward hatch to the forecastle and aft hatch to the lazarette (provision storeroom). Both hatches are different (see figure 36). The aft hatch has a number of molding strips that were added to prevent foot slippage (on the real ship it is necessary to stand on the hatch to read the compass). To our model scale, these strips are very small and could be omitted. The forward hatch has a small rectangular frame with glass for letting in light. This is also very small and may be painted on, or a small piece of acetate may be inserted to simulate the glass.

The round steel watertight hatch at the bow, port side, can be made from a thin piece of brass or wood and may be painted grey or black.

FIG. 31 – Basic Trunk/Hatch Box

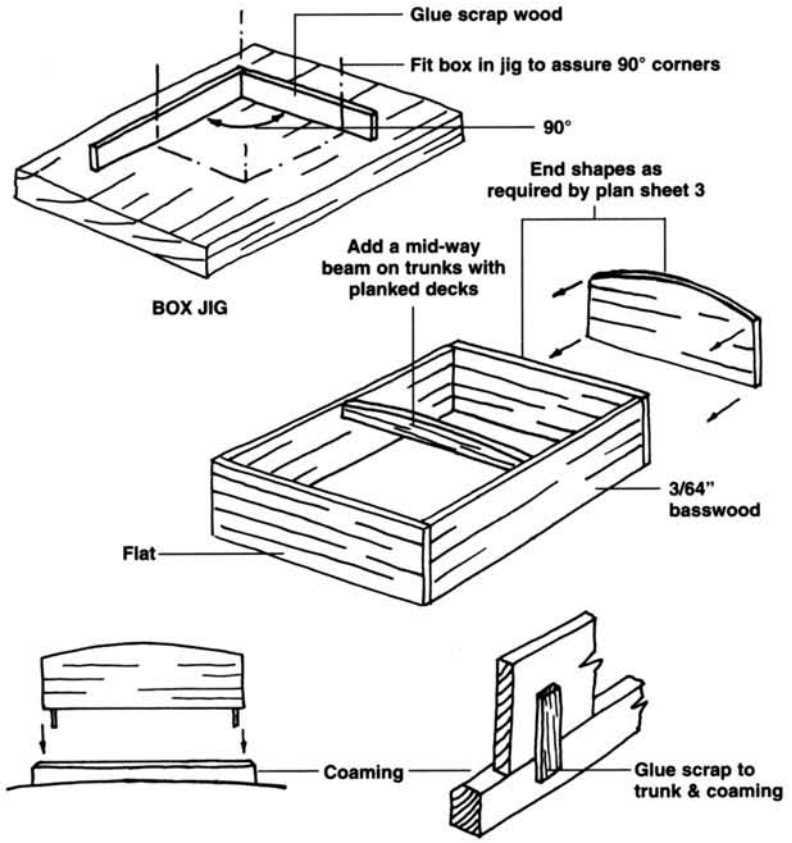

Glue scrap wood
Fit box in jig to assure 90° corners
90°
BOX JIG
End shapes as required by plan sheet 3
Add a mid-way beam on trunks with planked decks
3/64" basswood
Flat
Coaming
Glue scrap to trunk & coaming

FIG. 32 – Details on Trunk Tops

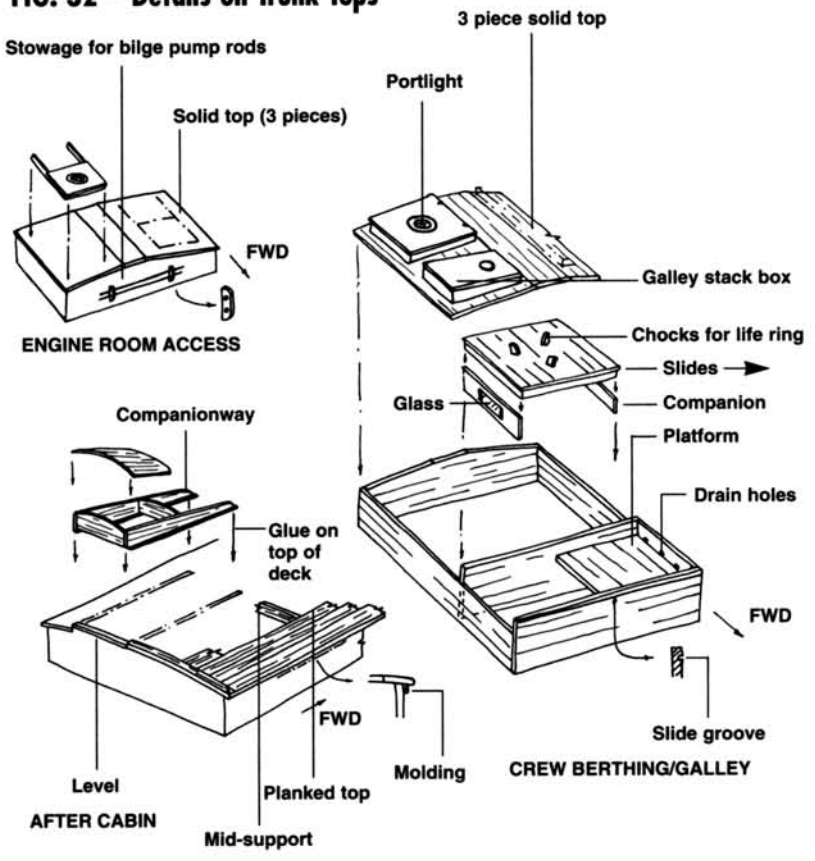


FIG. 33 – Vent Box

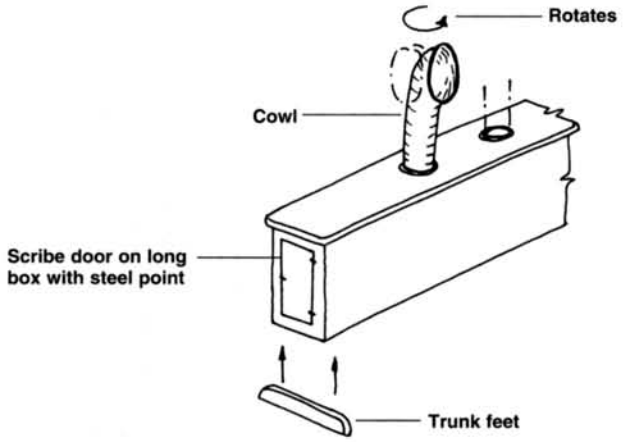


FIG. 34 – Binnacle

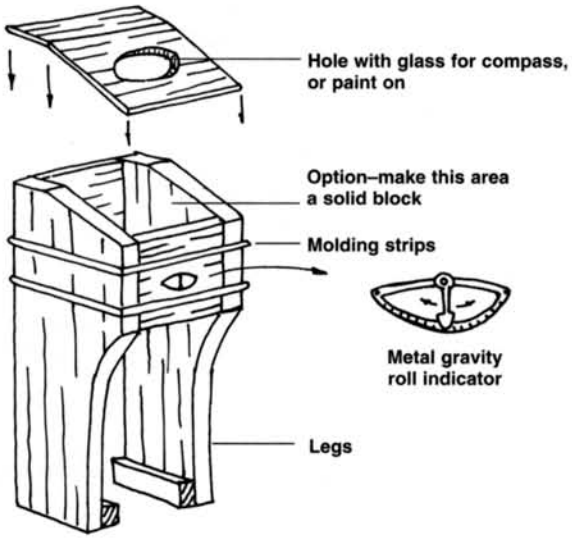
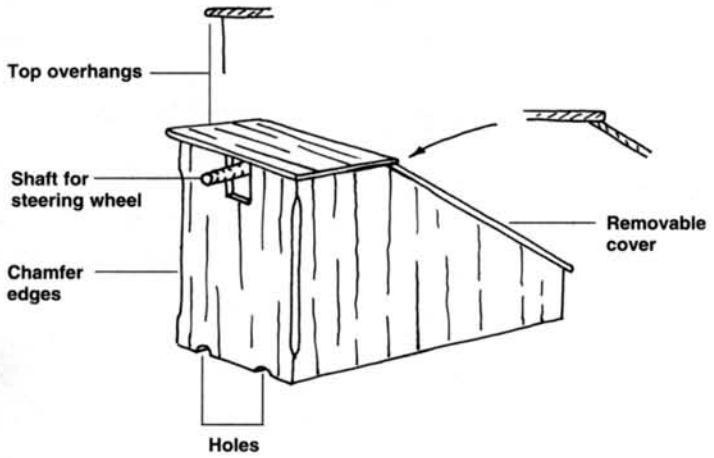
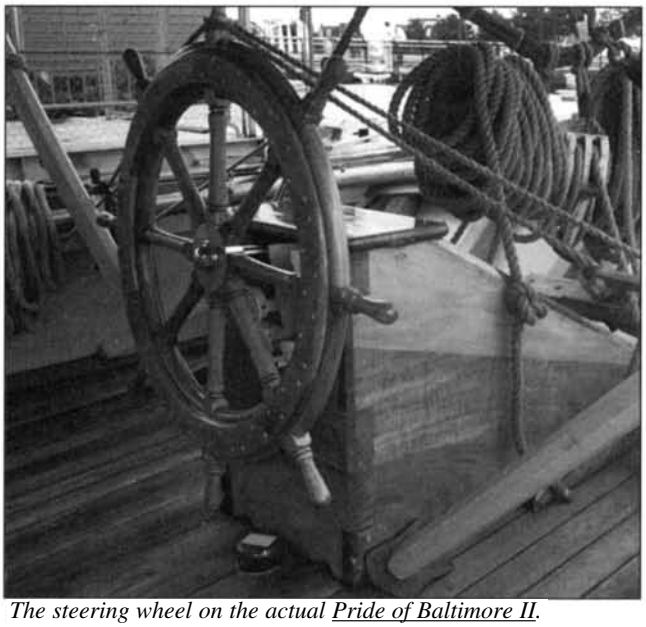

Hole with glass for compass, or paint on
Option–make this area a solid block
Molding strips
Metal gravity roll indicator
Legs

FIG. 35 – Wheel Box





The steering wheel on the actual Pride of Baltimore II.

The binnacle as it exists today.

Pride of Baltimore II cabin trunks & hatches.

8. Deck Lockers

There are five deck lockers which are simple boxes. One has a set of doors. It contains propane tanks. Like the vent boxes, these boxes do not have built-in coamings. All the lockers are complete boxes (have their own bottoms), but are permanently secured to the deck with bolts and in the locations shown on the plans. Some of the boxes have rope handles on the ends. Sometimes the boxes are removed from their locations during repairs, so the handles are used to lift the boxes. I suspect these boxes were also an afterthought following construction.

A typical box is shown (see figure 37). It can be made from strip wood or a solid block with a sheet top. These boxes are small. 1/32"-thick basswood is included in the kit for their construction. Notice that some of the boxes have feet, so they are raised slightly. Some of the lockers have mahogany tops and others are painted. Follow the plans for the colors.

9. Samson Post & Bitts

The samson post (double) at the bow; and the port and starboard bitts aft, should be made from wood as shown (see figure 38). The inboard end of the bowsprit will fit between the samson posts. For locating the bitts, you could also cut a square hole in the deck and insert the bitts rather than using the dowel pins shown in the figure. Other bitts are described under fife rails.

10. Windlass & Chain Pipes

The windlass barrel with quadrants, windlass pawl, pump and bracket, are all Britannia fittings. The riding bitts with knees for the windlass are provided laser-cut. A small hole must be drilled in the windlass quadrants and pump handle brackets. The connecting links should be made from brass wire.

The windlass fitting in the kit does not have any whelps (projecting ribs) on its barrel. On the real ship, there are twelve very thin whelps on the windlass barrel's starboard side, for handling an anchor rope. On its port side, every other whelp is a larger one to handle anchor chain. If you want to add the whelps to the kit fitting, glue on small slivers of wood. However, with rope or chain wrapped around the barrel, you can't see the whelps very well so they could be omitted.

To set the windlass, drill a hole in the bottom of each bitt and add a locating pin. Drill holes in the deck and glue the windlass in place (see figure 39). The chain pipes are supplied as Britannia fittings. On the real ship the chain pipe has a removable cap and a hole in the side where the chain comes out with the cap in place. The model fitting has no hole, so the chain must be glued to the side of the chain pipe to simulate that it actually goes inside the pipe. You could also drill a hole in the fitting or substitute a piece of brass tubing and run the chain down the tube.

11. Catheads & Anchors

The catheads and stowage of the anchors is shown on the plans. The anchors are supplied as Britannia fittings. Fit chain on the port side. Bring the chain in through the hawse pipe, around the windlass, and down the chain pipe directly aft of the windlass barrel. The starboard side should have a rope instead of chain.

FIG. 36 – Hatches

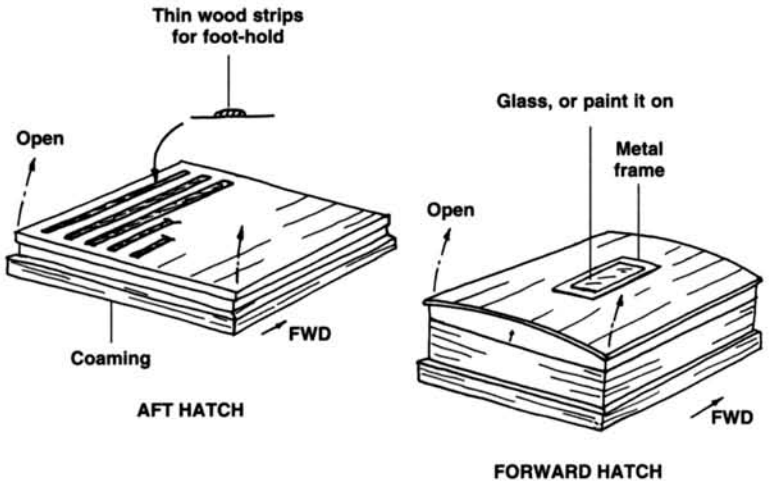


FIG. 37 – Deck Locker Box

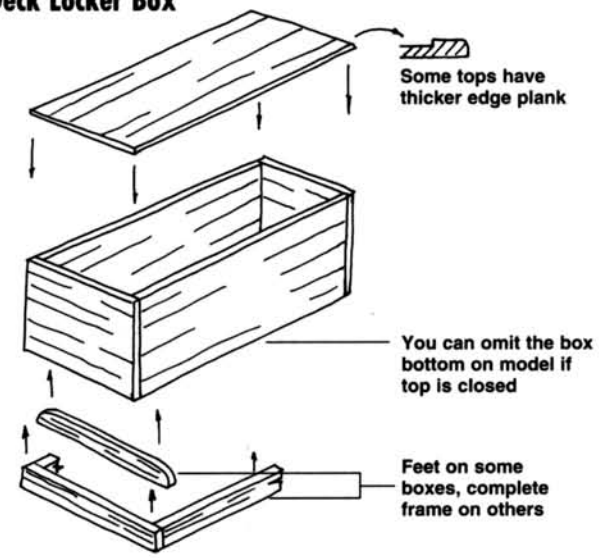
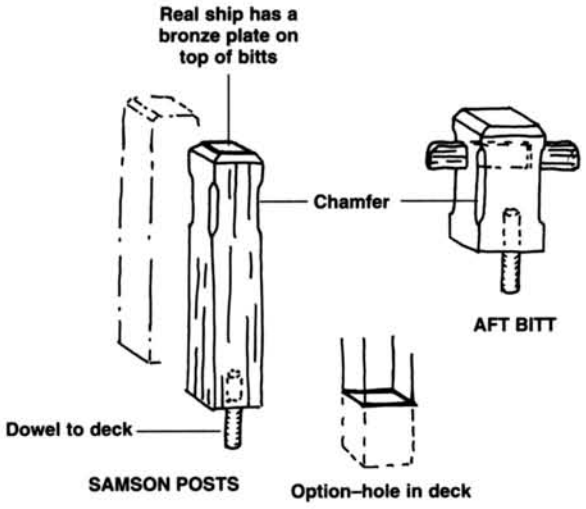

Some tops have thicker edge plank
You can omit the box bottom on model if top is closed
Feet on some boxes, complete frame on others

FIG. 38 – Samson Post & Bitts



12. Pin Rails

The pin rails at the shrouds are attached directly below the main rail to the bulwark stanchions (see figure 40). The real ship rails hold 19″-long conventional belaying pins. Brass belaying pins are provided in the kit. The pin rail at the bow is actually a triangular platform. It has two bronze rod pins outboard, but three cleats inboard since there is little clearance underneath because of the bowsprit.

There are no pin rails aft, only a single belaying pin in the main rail itself.

13. Fife Rails

The main and fore fife rails, and the small pin rail forward of the foremast, should be made from wood strips. The rails should be fitted with pins, not conventional belaying pins, but simple bronze rods 1/2″ in diameter. They should be fixed, not removable. Drill holes in the rails where required and glue a section of brass wire in each (see figure 41).

Winch heads are provided in the kit as Britannia castings. Two heads go on each of the fore and main fife rails (see figure 42). No fitting is provided for the winch pawls. Make them as shown in the sketch. The real ship winches are operated by wooden rods. These are stowed below the winches in front of the masts.

14. Bilge Pumps & Fire Stations

On the real ship, one fire hydrant and hose is located on the aft side of the crew berthing access trunk. The hose lays in metal clips. Another fire hydrant is found aft of the main mast on the starboard side within the fife rail. For the model, the hydrants are supplied as Britannia castings, or you can make them from a 1/16″ diameter brass wire. Chuck in a drill, and file the shape. Then solder a short piece of brass on the side to represent the side outlet pipe. The hose can be simulated using a strip of cloth or paper.

Bilge pumps on the real ship, are provided as Britannia castings for the model, and are located just aft of the main fife rail bitts, port and starboard (see figure 43). The metal rod handles for operating the bilge pumps are found stowed in wood chocks on the forward side of the engine room trunk. Each bilge pump has a ten foot length of hose connected so the water can be pumped directly overboard. You could add this last detail to the model or omit it.

15. Deck Prisms

The 14 deck prisms of the real ship are simply glass fitted into a metal frame. They let in light to the spaces below. The kit provides brass rings and jewel inserts for the prisms. First, glue each jewel into a brass ring, then drill the holes in the deck and insert each unit.

16. Rubber Pads

There are a number of rubber pads along the topside of the main rail. They are used as step pads for the crewmen, or as anchor pads to protect the rail from abrasion created by the stowed anchor (see plan sheet 3 of 6). These pads are about 1/2″ thick on the real ship. A piece of paper or very thin piece of wood painted white, off-white, or light grey can be used if you wish to include this detail on the model.

FIG. 39 – Windlass

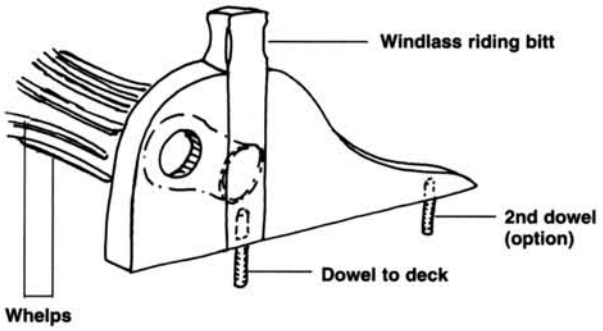


FIG. 40 – Pin Rails

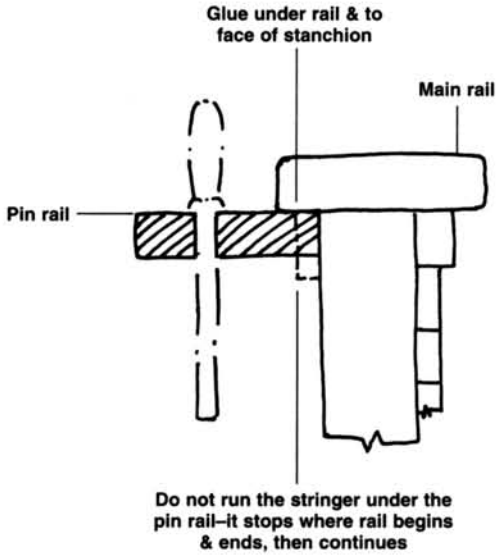
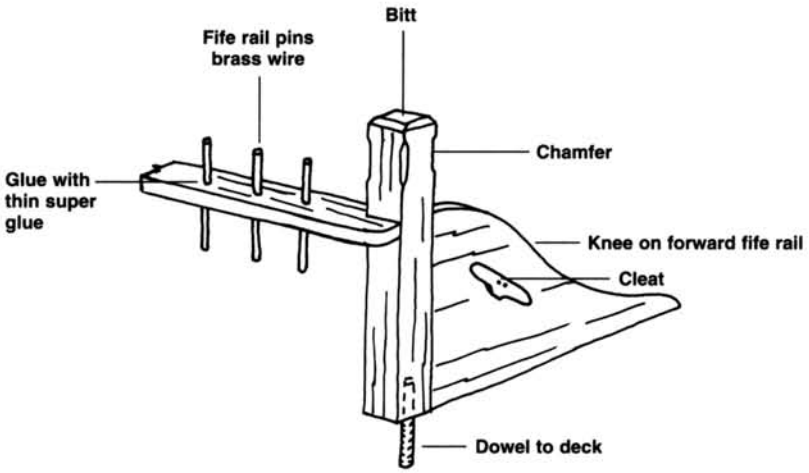

Glue under rail & to face of stanchion
Main rail
Pin rail
Do not run the stringer under the pin rail–it stops where rail begins & ends, then continues

FIG. 41 – Fife Rails



17. Steps

The small steps port and starboard shown on the plans are used for stepping up to the gangway when in port. Make these using 1/32" basswood sanded to 1/64".

18. Lifelines

The kit provides brass wire for making the lifeline stanchions for inserting in the main rail (see figure 44). At the bow and stern, insert an eyebolt in the rail for securing the ends. The line should run through the eyes in the stanchions. Notice on the outboard profile of the plans, that the line is tied to the shrouds rather than having a stanchion at that location. On the model, droop the line slightly between stanchions. It should not be too taught.

19. Life Rings

There are three life rings and they are provided as Britannia metal fittings in the kit. One should be installed on top of the access hatch forward, held by wooden chocks. Two aft life rings should be hung on a cleat inside the bulwarks both port and starboard. These are colorful orange rings with white cord. If your kit casting does not contain the cord, glue on a thread to simulate the cord. On each ring of the real ship, black lettering spells out *Pride of Baltimore II*. At our model scale, forget it, unless you are one of those people who can write the Gettysburg Address on the head of a pin.

20. Cavels & Mooring Chocks

Make these from wood and install as shown (see figure 45).

21. Channels

The channels can be made from wood strips and installed now, or wait until you make the chain plates. Consult Stage H for chain plates and channels.

22. Eyebolts & Cleats

The kit has a sufficient number of metal cleats and eyebolts. You could make your own cleats out of wood, but at this scale they are rather small to create from scratch. Since there will be some strain on these items from rigging, they must be secured firmly. Drill a small hole through the cleats and insert a brass wire or pin. Drill a hole in the deck or wherever required and insert the eyebolt and cleat pin. Use some super glue on a toothpick and touch the glue around the eyebolt and cleat to secure it. Careful...not too much glue! Tug on it to be sure that it will not come out.
The eyebolts are simply a wire bent into a loop. If you want to close the loop, touch the opened parts with a little solder.

The locations for all of the rigging eyebolts are shown on the deck plan and bulwarks. Between this plan and the rigging plan, you should have no trouble finding the exact locations.

FIG. 42 – Fife Rail Winch Heads

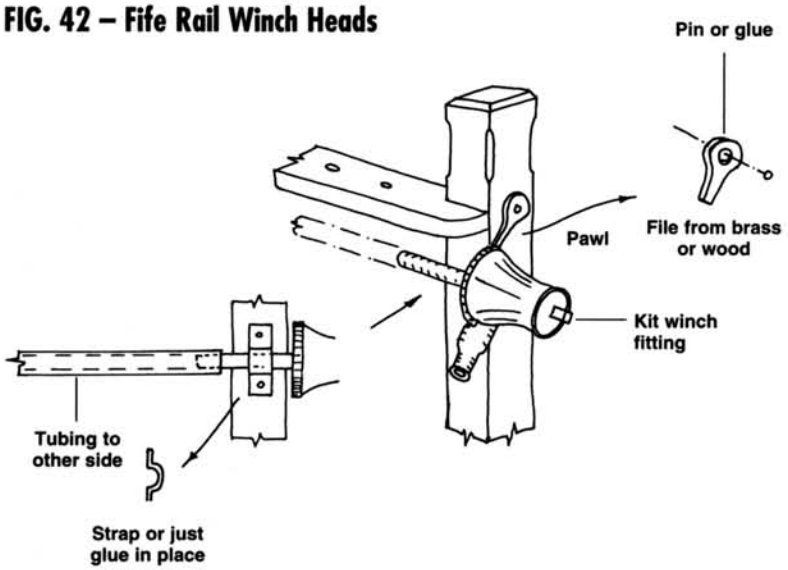


FIG. 43 – Bilge Pump

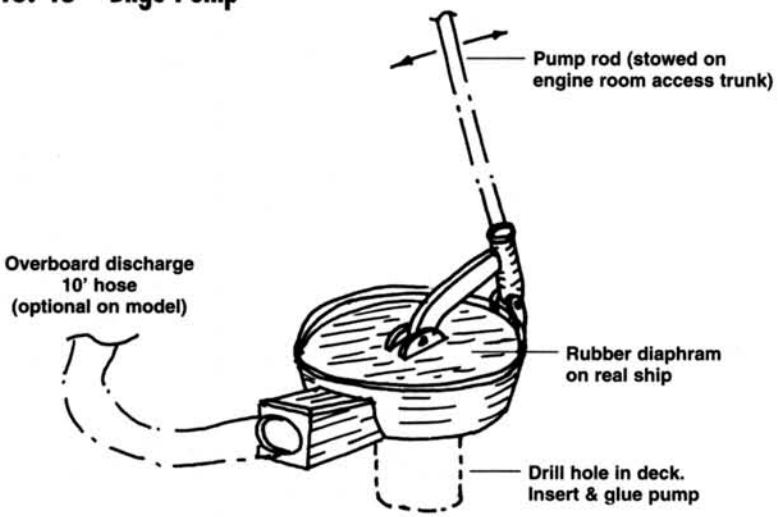
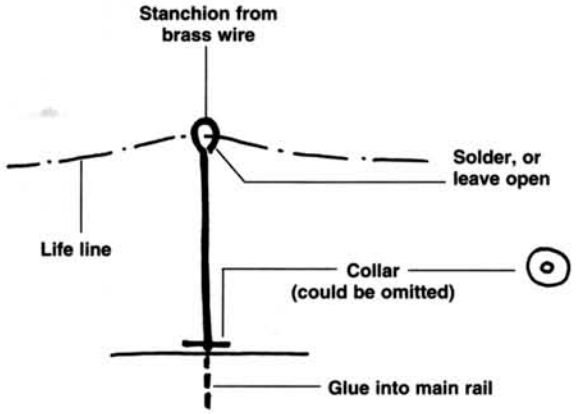

Pump rod (stowed on engine room access trunk)
Overboard discharge 10' hose (optional on model)
Rubber diaphram on real ship
Drill hole in deck. Insert & glue pump

FIG. 44 – Lifeline Wire & Stanchions



23. Props & Struts

The props have been supplied in the kit as Britannia castings (see figure 46). Paint them to look like brass. The struts should be made from brass strip and tubing. Brass rod is provided for the shaft. The shaft should be steel so it can be painted silver or a dull black. Make sure your layout on the hull is correct so the port and starboard props are at the same level.
The real *Pride of Baltimore II* has props, a 20th century necessity, but if you want to model a typical old Baltimore Clipper, the props and struts could be omitted.

24. Rudder

The rudder is a laser-cut piece, but needs to be tapered according to the plans. The pintles and gudgeons and other straps are to be made from brass strip (see figure 47).

25. Swivel Guns

The two kit-supplied Britannia metal swivel guns should be mounted on the main rail adjacent to the fake gun stocks. As shown on the plans, the real ship gun is metal with a varnished wooden grip. There is a small wooden seat on the rail for securing the handle of the gun when not in use. A small cord is used to tie the handle in the seat.

26. Cannons

The *Pride of Baltimore II* carries four cannons. The kit provides brass cannon barrels, laser-cut wood carriages, and laser-cut trucks (wheels). Notice that the front wheels are larger than the rear wheels. This levels the carriage over the deck camber. Use a 1/32" brass rod for the truck axle. When set up, the guns are located only at Gunports 3 and 4, port and starboard. Gunport 2 is not even usable because the pin rail and belaying pins are in the way (see figure 48 for gun construction and rigging).

27. Ship's Bell

A brass bell is provided in the kit. It should be hung by a U-shaped brass bracket and set on the forward end of the after cabin trunk. Make the bracket from wire or brass strip.

28. Running Lights, Stern Light & Crosstree Spotlights

The stern light can be added now. The running lights will be added after the shrouds are installed. The light itself is a Britannia casting. Make the boards out of wood as shown on plan sheet 4. The spotlights, supplied as Britannia fittings, are located in both the fore and main crosstrees as shown on plan sheet 4. Drill a small hole and insert the lights. Cut the stem of the fitting off equal to the thickness of the crosstree. It's long, so it can be handled easier before installation.

29. Stern Flag Emblem

On the transom there is a small plaque which replicates the Maryland Flag, or Lord Baltimore's Coat of Arms. Cut the emblem from wood or a small piece of brass. The plans show an enlarged view of the emblem. While you may not be able to paint it exactly, you should attempt to at least get the black, red, yellow, and white colors touched in for a colorful visual effect.

FIG. 45 – Cavels & Mooring Chocks

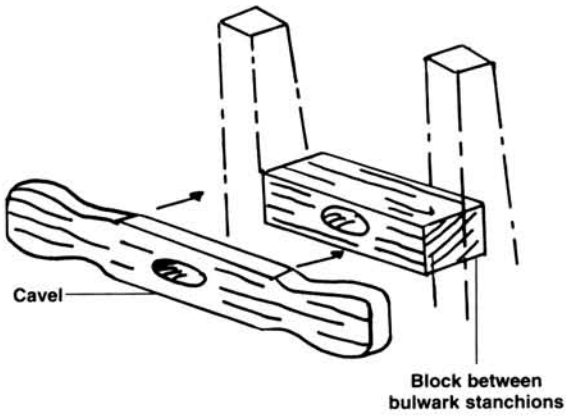


FIG. 46 – Props & Struts

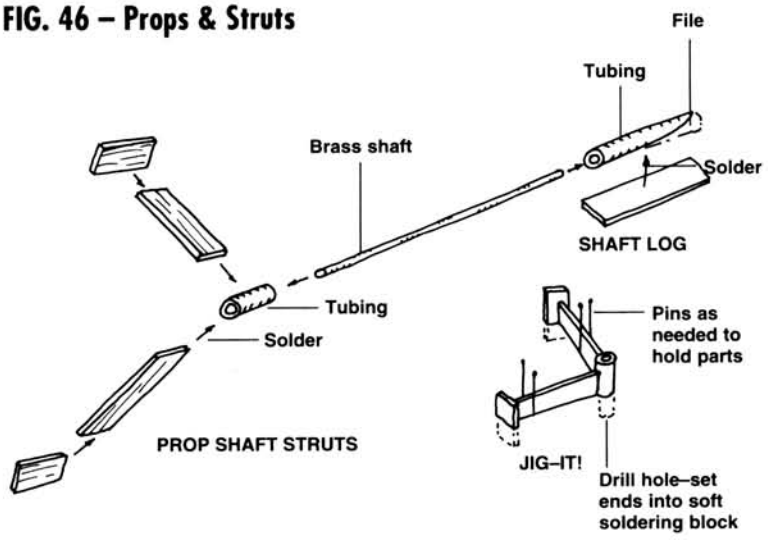
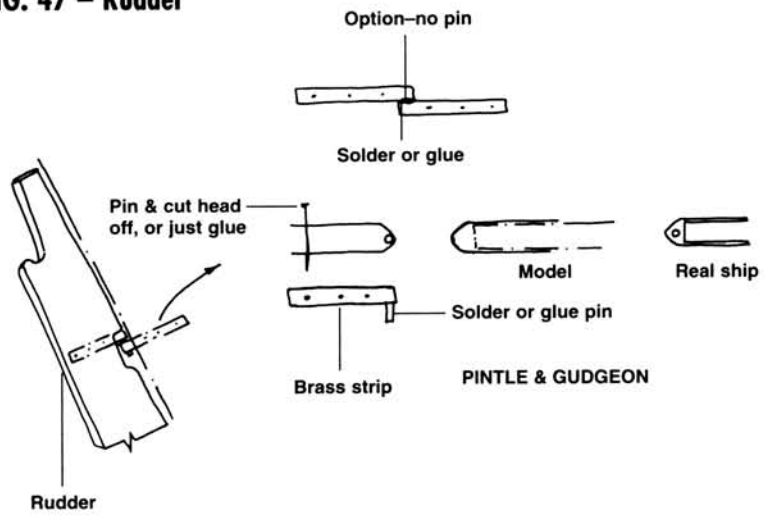


FIG. 47 – Rudder



30. Ship's Name

The *PRIDE OF BALTIMORE II* name should be lettered on the stern and bow as shown on the plans. Also, the name *CHASSEUR* must be applied to the stern of the ship's boat. The best way to add these details is to use dry transfer letters. These can be purchased at a number of art and office supply stores. After applying the lettering, paint over the letters with a coat of flat varnish. You can also find decal lettering from model railroad stores.

With the dry transfer letters, you may not be able to find the right colors. The stern has gold and red. If you can't find these colors, use white or black lettering, then paint over the letters. This is tedious, but the letters provide the guide, so painting the colors by hand usually looks good.

31. Ship's Boat & Cradles

Cut the ship's boat cradles from basswood. The seat is rubber on the real ship. For the model, just paint the top black. On the real ship, the cradles are removable. For the model, glue them in place.

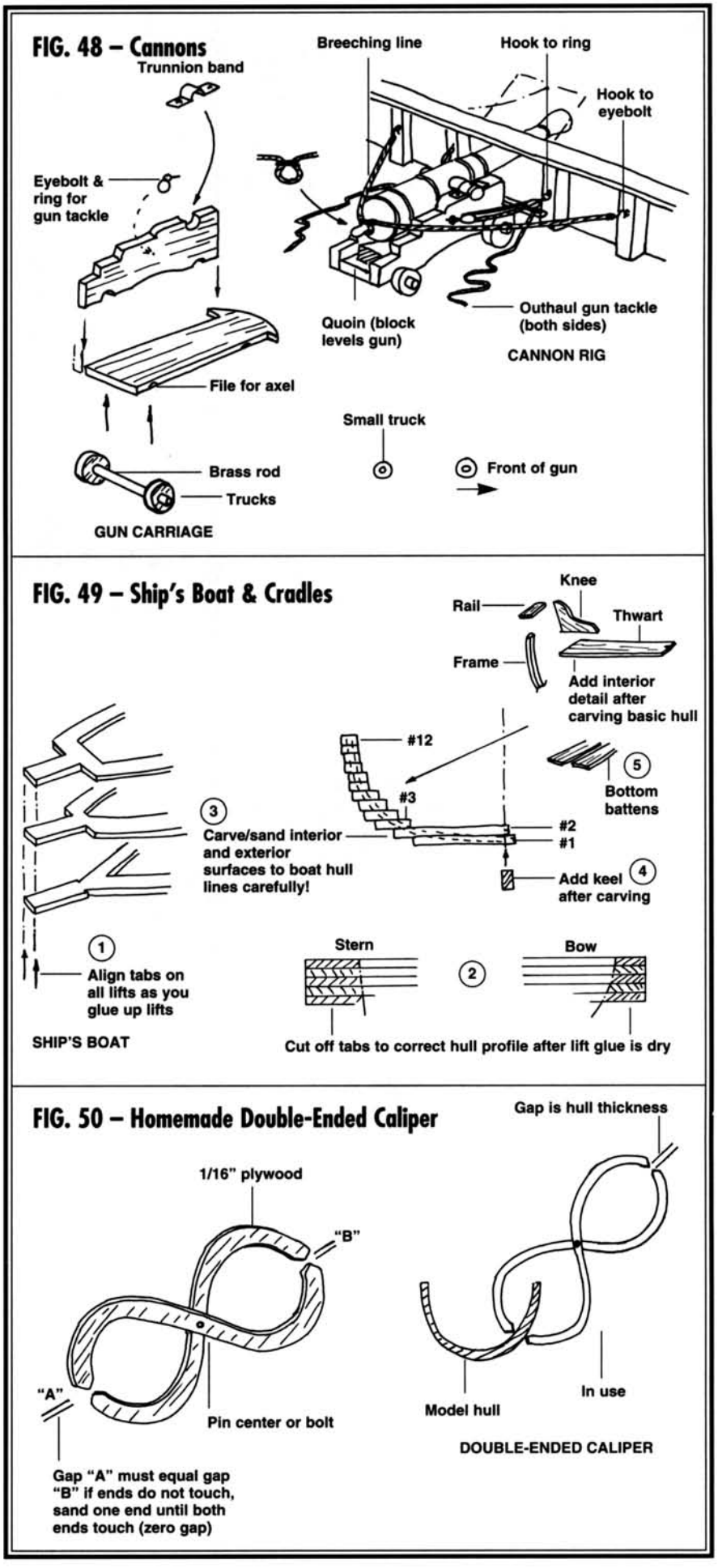
The ship's boat is unique. Instead of the usual Britannia casting or solid block boat found in most kits, this kit has laser-cut lifts for "bread & butter" construction (see figure 49). As shown, there are end tabs on each lift to assist with the alignment. The wide tab is the stern and the narrow tab is the bow. Each lift from tab end to tab end is the same length. As you glue upward on the lifts, keep the tabs in line. Use only a thin coat of glue. If you get too much glue on each lift, the accumulated thicknesses of the glued lifts will create an overall height that is too great.

Next, you will be doing some carving, and will be faced with a challenge: how thin can you carve the hull without breaking it? Begin with the inside of the boat first, using chisels and sandpaper. Carve or sand the corners of the lifts down to the intersection of two lifts. When all is smooth, the shape should be reasonably correct. Next, cut off the tabs and carve the hull to the correct profile. Then, carve or sand the outside form. Be careful; the hull will be getting thin by now. Carving a small boat hull is difficult. Make some templates from the body lines shown on the plans to get the shape correct. Use a homemade double-ended caliper as a way to check the thickness of the hull (see figure 50). Add the keel and rudder and you will be done with the basic hull.

Option: The boat may be easier to carve if you temporarily leave the two solid bottom lifts off initially. Carve the inside close to the finished shape, then add the bottom lifts and complete the inside carving.

How far you want to go with detailing is up to you. You can add bottom boards, frames, thwart knees, and gunwale molding. All these details add to the model, but will be a little difficult. If you do it, always keep the scale in mind. This is a delicate boat. Make the thwarts 1/64" thick (sand down a 1/32" piece).

This particular boat on the real ship is lap strake planked. You can carve or file the laps in the outer hull of the model if you desire. Again, this is critical carving. Beginners may want to pass this up for now. If you are not up to a full open boat, you can do the outside and cover the top. Lash the boat down to the deck eyebolts as shown on the plans.



STAGE F

MAST & SPAR CONSTRUCTION

At this point, your model should have a considerable amount of stuff on board. Take another look, correct any mistakes and touch up paint blemishes. Go over the plans again. Did you miss anything? The *Pride of Baltimore II* has a lot of detail on the deck. When all looks well, get ready for the masts and spars.

1. The Importance of Scale

While the scale of masts is important, the yards and gaffs are probably the most critical spars to consider in regard to proper scale. Stubby, fat-ended yards stick out like sore thumbs, giving a model that unprofessional look. Care should be taken to assure that yards are tapered properly and to correct scale. It is sometimes difficult to taper a small yard, because breaking the yardarm is always a risk. However, the amount of time and effort spent making a yard are worth the investment when the end result is an overall appearance which is pleasing and scale-like.

2. Shaping & Tapering Masts & Spars

Plan sheet 4 shows all the masts and spars to scale. Dimensions are given for the critical maximum diameter at both center and end shoulders. The poles and yardarms beyond the shoulders should be just slightly smaller than the diameter given at the shoulder.

The kit provides round dowels for masts and spars, but final tapering to plan dimensions is still required. A dowel is difficult to taper since it is already round. The best approach is to slice the dowel from a round shape at maximum diameter to a square shape at the ends, then to an eight-sided shape. Final rounding is achieved by sanding. This approach prevents a round dowel from becoming an oval (see figure 51).

Although a little tricky, you can also taper a dowel by chucking it into an electric drill or lathe. As the speed of the drill turns the dowel, use sandpaper to shape the taper.

Many experienced modelers like to discard the dowels and make masts and spars from square stock. The advantage: you can use a wood of your choice and marking tapers is easier. It also permits including square or octagonal sections in the spar without adding any wood to build up the diameter. See discussion below.

3. Building & Installing the Masts

Both the fore and main mast are identical except for the length of the mast. Note also that the lower masts do not taper at all. It's a straight section from the deck up to the head.

The fore and main mast heads can be squared simply by using a razor saw or hobby knife. After squaring, cut the tenon (or tongue) at the top. The chamfer on the edges is actually the outer surface of the dowel. Just below the head, the sides must be flattened to conform to the trestle tree cheeks (see figure 52).

Variations in Diameters: The masts at the deck will be a little confusing because of the octagonal shape. On the real ship, the distance across the flats of the octa-

FIG. 51 – Shaping & Tapering the Masts & Spars

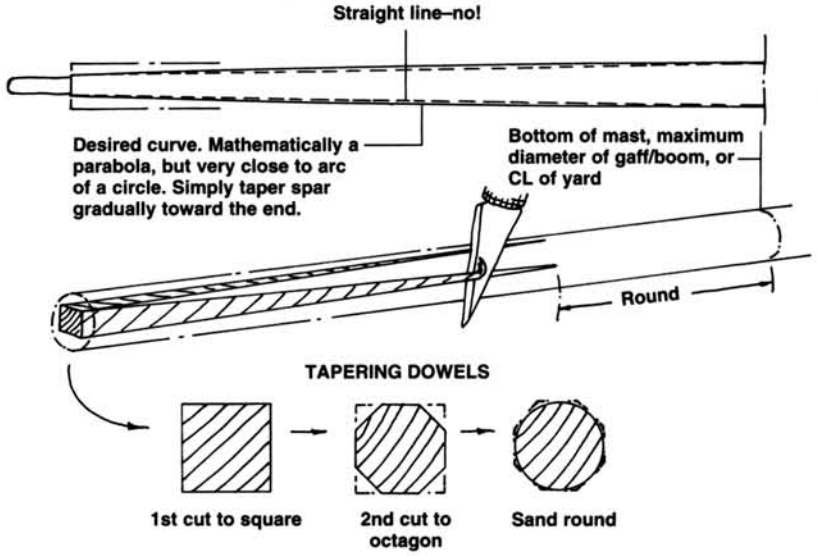

Straight line–no!
Desired curve. Mathematically a parabola, but very close to arc of a circle. Simply taper spar gradually toward the end.
Bottom of mast, maximum diameter of gaff/boom, or CL of yard
Round
TAPERING DOWELS
1st cut to square
2nd cut to octagon
Sand round

FIG. 52 – Squaring the Mast Heads

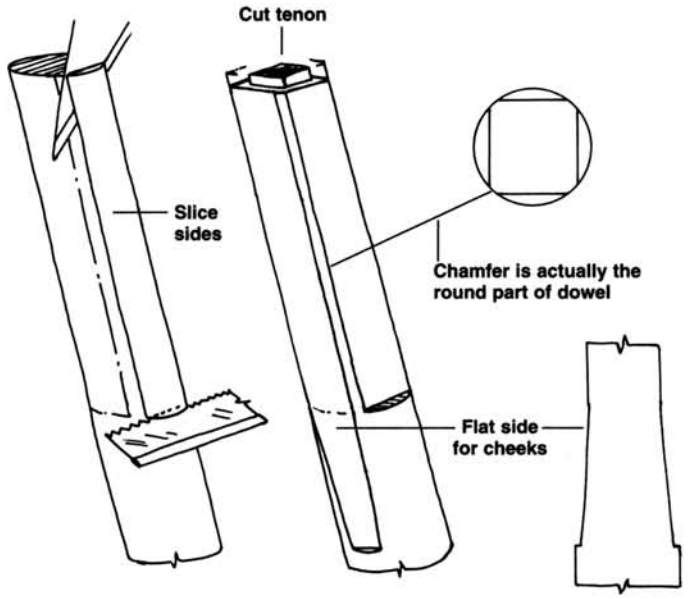
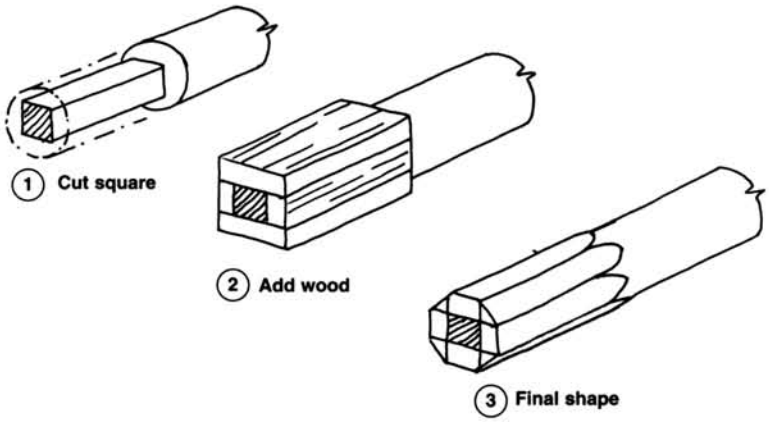


FIG. 53 – Spar Diameter Build-up



gon is equal to the diameter of the round part of the mast above. This means that the distance across the corners of the octagon is larger than the diameter of the round part of the mast. The dowel provided in the kit is 5/16" diameter, which is the diameter of the round part. If you cut the octagon into the dowel, the distance across the flats will be too small. On the other hand, since you will have a mass of cleats and belayed rigging lines in this area, you may not notice the difference.

If you want to do it correctly, you must first build up the heel by adding some wood to increase the diameter. Afterward, you may cut the octagonal shape which will flow smoothly into the basic diameter (see figure 53).

The fore and main topmast are similar except for the length, and they must be tapered. The heel of the topmast dowels must also be modified to incorporate the increased width of the square section. In the heel, drill a hole and square it up with a file. The hole will hold a fid which prevents the topmast from falling through the top (see figure 54).

After the basic masts are completed, drill any holes required to represent sheaves in the masts. You do not need to install actual sheaves. They would be covered by the line anyway. The topmasts also require a cheek block on the side of the mast at top.

Mast Hoops: Important! The kit contains laser-cut plywood mast hoops. Even though you may not rig the model with sails, the hoops should be put in place on the masts. Placement must be done BEFORE the masts are assembled. So, before you add the boom rest on the mainmast, and before you add deck wedges on either mast, slide the hoops onto the masts. This also would be a good time to seize the brail blocks to the mast hoops, before putting the hoops on the masts.

Put thirteen 7/16" O.D. (outside diameter) hoops on the foremast, sixteen 7/16" O.D. hoops on the mainmast, and eight 5/16" O.D. hoops on the main topmast for the gaff topsail.

Mast caps: Both mast caps are supplied laser-cut. However, since the caps will need to fit the mast at an angle, you will have to shape the holes in the caps to fit the square masthead tenon and the topmast diameter (see figure 55). The cap should also have an iron band around it. It can be made from brass strip or omitted. Add all the eyebolts though.

Trestle Trees & Crosstrees: Next, make the trestle trees and crosstrees according to the plans (see figure 56). The primary difference between the fore and main crosstrees is in the length. Two of the crosstrees at the foremast require a hole for the futtock shrouds. The mainmast crosstree needs only one hole for a backstay. The crosstrees act like spreaders. There are no shrouds for the main topmast.

Shades of the 20th century!—on the main mast trestle trees, you will find an enclosed radar dome with horns below the dome. Add the radar for a true *Pride of Baltimore II* replica, but if you wish to model an authentic old-time Baltimore clipper, please do not include this radar.

Boom Rest: The main boom rest is also provided laser-cut. File the hole so it will fit on the mast. Glue it, then add the support brackets. Notice that the side brackets have a hole for a belaying rod (see figure 57).

FIG. 54 – Topmast Heels

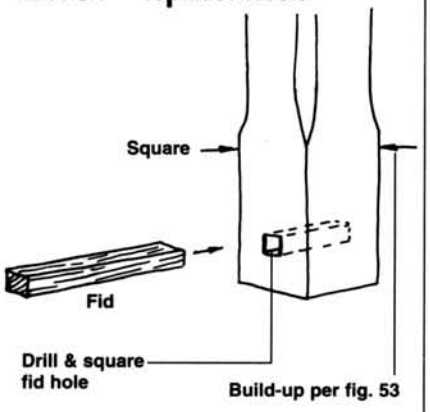


FIG. 55 – Mast Caps

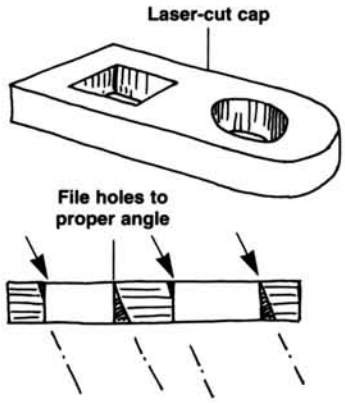


FIG. 56 – Trestle Trees

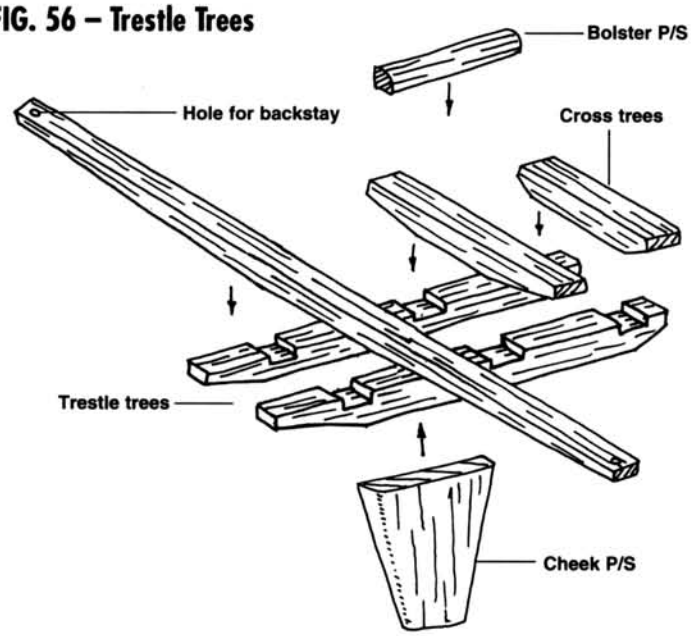
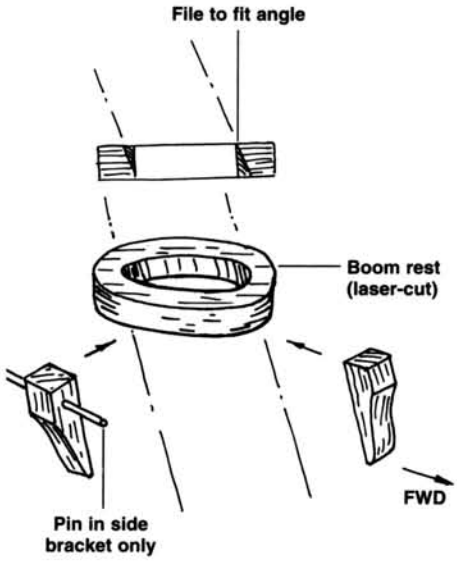


FIG. 57 – Boom Rest



Cleats: Finally, add the cleats around the fore mast as shown on the plans. The cleats are supplied as Britannia fittings but you can make them from wood if desired. In any case, drill a hole through the cleat and insert a pin for securing the cleat to the mast. Glue alone will not do the trick; the cleat will probably fall off as you belay a line.

Mast Assembly: With all parts made and pre-fitted, and the mast hoops in place, assemble tops, caps, and the topmast on the lower mast. Before you glue everything in place, check to make sure the topmast is in line with the lower mast. Adjust the holes if necessary (see figure 58).

Mast Installation: Paint and stain the masts before you install them. Insert the masts in the deck holes and add some slivers of wood, as necessary, to secure the mast in the hole. Check the alignment forward, aft and athwartship so the angles are in accordance with the plans. Finally, make the mast wedges as shown (see figure 59).

4. Building & Installing the Bowsprit, Jibboom, Dolphin Striker & Jibboom Spreaders

Bowsprit: The bowsprit should be made from square stock, not a dowel. The bowsprit goes from square, to octagonal, then to a round shape. The bowsprit cap is supplied laser-cut, but like the mast caps, you will need to angle the holes. The cap should have an iron band around it. This can be made from brass or omitted. First, cut the bowsprit to the right length and make sure you have a perfectly square stick. Next, cut the bottom angled section inboard off the square. The octagonal shape comes next, then cut the round shape forward. Finally, cut the tenon at the forward end (see figure 60).

Jibboom: The jibboom is straight forward. It does not require any fittings. But, three holes need to be drilled at the end for the head stays to pass through.

Assemble the cap and jibboom on the bowsprit. Be careful to align it correctly before you glue. The aft end of the jibboom fits into a shaped block as shown on the plans. Just ahead of the block, the jibboom is lashed to the bowsprit.

Dolphin Striker & Jibboom Spreaders: Make the dolphin striker and jibboom spreaders and attach them to the bowsprit cap fitting. They should be secured by a pin through eyebolts (see figure 61).

Insert the bowsprit assembly through the bow into the samson posts. Again, check the alignment. Make sure you have all the fittings, eyebolts, and holes finished. When you start to rig, you will want them to be ready. There is a small angle iron at the heel which bolts the bowsprit to the samson posts.

5. Building the Fore Yards

You will build the fore lower yard (also called the course yard), topsail, and topgallant yards now, but the installation will be done later during the rigging stage. Some of the rigging, however, is included with the yard construction because it's easier to do with yards in hand. Footropes and lashings for the studding sail and ringtail booms are best added at this stage. They are shown along with the spar details on plan sheet 4 (see also figure 62).

FIG. 58 – Mast Assembly

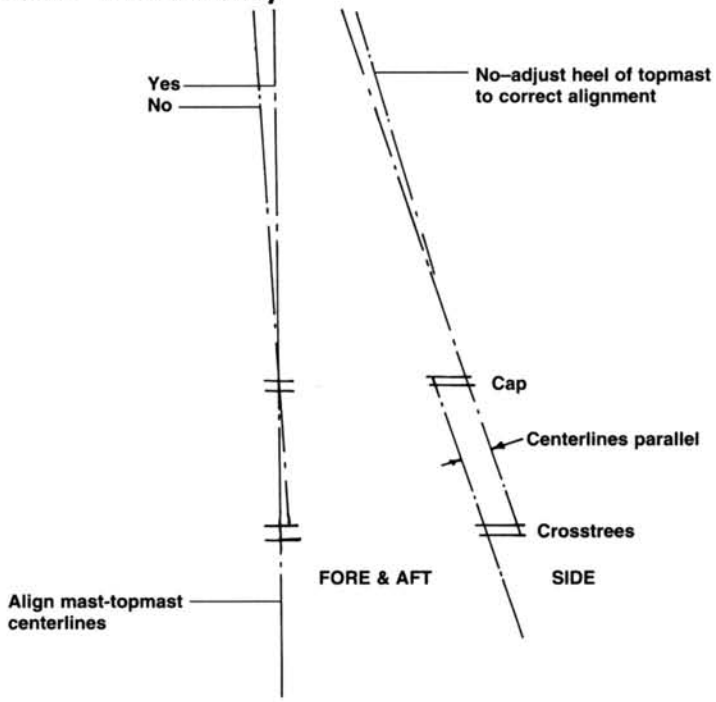


FIG. 59 – Mast Wedges

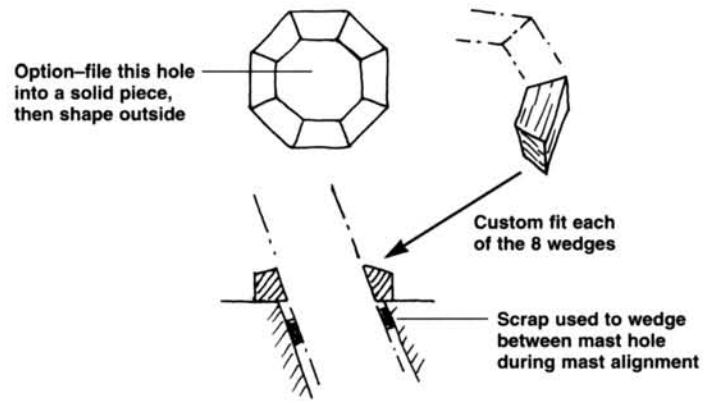
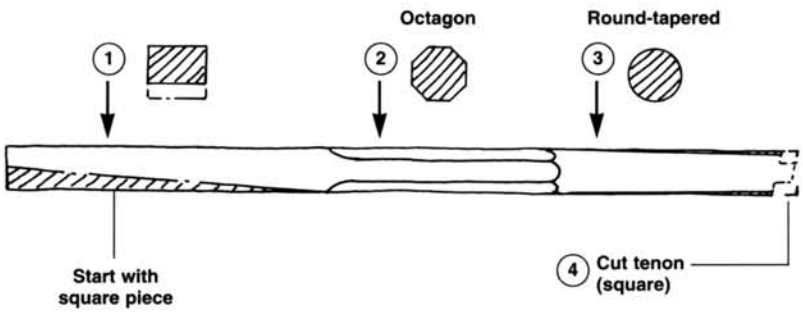

Option–file this hole into a solid piece, then shape outside
Custom fit each of the 8 wedges
Scrap used to wedge between mast hole during mast alignment

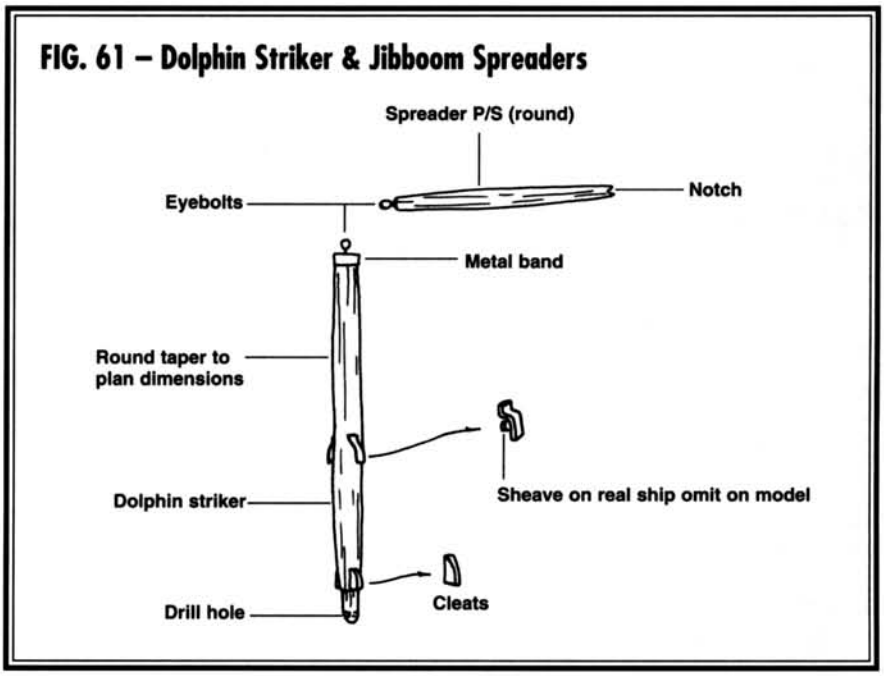
FIG. 60 – Bowsprit



There are a number of cleats, yokes, and other fittings that need to be added to the shaped spar. Plan sheet 4 shows all of the detail. You will discover the use of the various cleats when you get to plan sheet 5 and start the rigging process. By the way, some cleats are the ones with two horns for belaying lines. The other type of cleat is a simple piece of rectangular wood used so an eyesplice or line passed around a spar will not slide along the spar. These are typical on older ships with a lot of rope stroppings instead of the iron bands with eyebolts.

The topgallant yard is hoisted as needed on the real ship, and is held only by a halliard and the sheets—no parrals and no braces at all. Most of the time, this sail is furled on its yard and it is stowed along the port bulwarks just aft of the main shrouds. If you do not intend to install this rig on the model, you can stow it, or leave it off altogether. Plan sheet 4 shows the stowage location.

Reminder: Paint and stain the yards before you set them aside. Some time ago you were told to paint as you go along, but a reminder here is in order. Once you start rigging, you must have all the painting (or staining) completed.

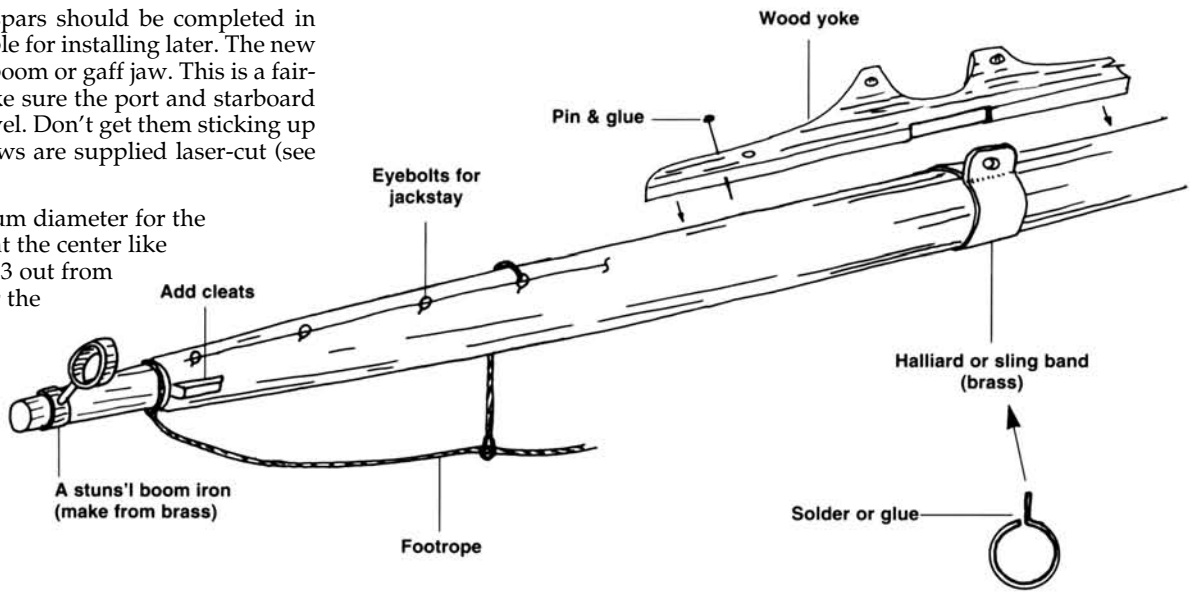


6. Building the Main Boom & Gaffs

Like the yards, these spars should be completed in hand as much as possible for installing later. The new item to build now is a boom or gaff jaw. This is a fairly simple task, but make sure the port and starboard jaws line up and are level. Don't get them sticking up like bird wings. The jaws are supplied laser-cut (see figure 63).

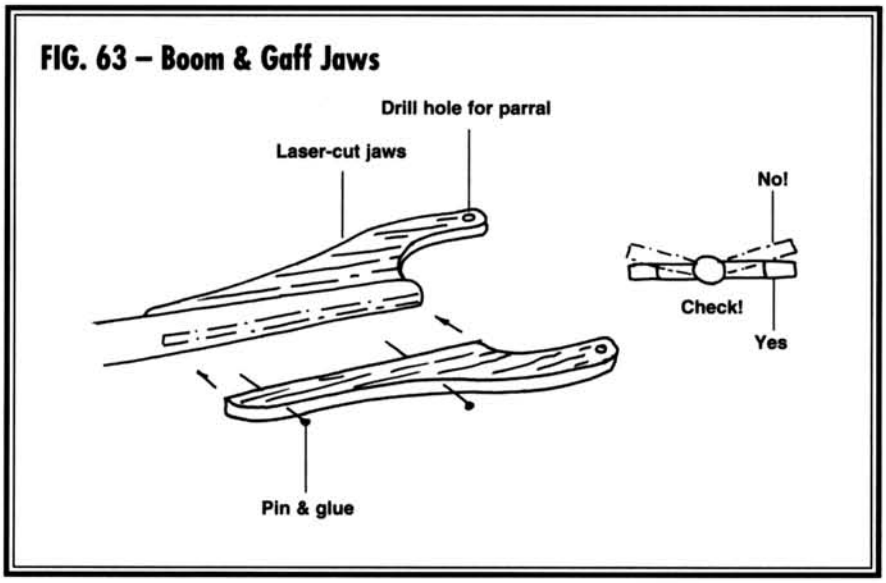
Notice that the maximum diameter for the boom and gaffs is not at the center like the yards, but about 1/3 out from the forward end. Taper the booms the same as a yard, just start at a different place.

On the real ship, the parrals for the gaffs and boom are a series of wooden balls on a line. Actually, the balls are a little flat on one side. For the model, you can use some small beads or just use a line for the parral.



7. Ringtail & Studding Sail Booms & Yards

The real ship ringtail and studding sails (called stunsails, or stuns'ls, for short) require a boom, and a yard (*Pride of Baltimore II* crew calls it a club) at the head of the sail. When not in use, the boom is generally left in place. The stunsail boom is pushed in toward the mast. The yard and sail are removed and stowed below deck. Consequently, if you do not want to rig these sails, they just disappear, so you need not make them in the first place.



STAGE G

GENERAL RIGGING & SAILMAKING INFORMATION

Rigging Terms Defined

If you are new to the nautical world, there are a few rigging terms you should know. You old salts can skip this part and grab yourself a mug of grog:

1. A sail has names for each of its edges and corners. On a square sail, the top edge is called the *head*, the bottom is the *foot*, and sides the *leech*. The lower corners are the *clews*. On a fore and aft sail, the top is the head, bottom the foot, aft side the leech, and forward side the *luff*. The lower forward corner is the *tack*, aft lower corner the clew, upper forward corner the *throat*, and the aft upper corner the *peak*. A triangular sail is similar except it has no head side, but the upper corner is called the head. There is no throat or peak.

2. *Standing rigging* refers to the fixed rigging that supports the masts and spars. Generally, standing rigging is tarred; therefore, it is black or dark brown. The *Pride of Baltimore II* has some standing rigging that is not black, so follow the color notes given on the plans.

3. *Shrouds* are transverse support lines for masts. *Deadeyes*, and their lines called *lanyards*, are used to taught-up the shrouds, stays, and other lines. Deadeyes are wood and have three holes for reeving the lanyards. On a modern day ship, such a device would be replaced by a metal turnbuckle. Sometimes, you will find a *heart* or a *bullseye*. These are similar to a deadeye except there is only one large hole instead of three. They are used for more permanent installations. *Chain plates* are iron bars or a rod for holding shroud deadeyes along the hull. At the topmast shrouds, there are no chain plates. Instead, there are rods or rope that go from the deadeye to the mast or lower shrouds. These are called *futtock* shrouds. If these shrouds go only to the lower shrouds, they generally tie into a wooden or metal rod called a *futtock stave*.

4. *Stays and backstays* support the masts from fore and aft forces. A *running backstay* is one that has a tackle at deck. It can be moved along the deck if necessary.

5. *Footropes* are lines that sailors stand on when working and furling sails. *Stirrups* hold the footropes.

6. *Bobstays* support the bowsprit from upward loads, and *guys* support jibbooms and bowsprits from side forces. Bowsprit guys are sometimes called *bowsprit shrouds*. Bowsprits sometimes have a vertical strut below the jibboom cap to help increase the downward pulling force of stays leading back to the hull. This strut is called a *martingale* or *dolphin striker*. Head stays go through the jibboom, down to the dolphin striker, and back up to the bow. Separate stays starting at the jibboom, rather than continuing from the head stays, are called *martingale stays*.

7. *Running rigging* is a term applied to lines that move, reeve through blocks, and are used to operate sails and spars.

8. *Blocks* are wooden or metal shells with sheaves for handling lines. A *tackle*, or *purchase*, is a device made up of several blocks and a line to provide a mechanical advantage for handling sails and spars.

9. *Halliards* (also spelled halyard) are lines for raising and lowering a sail, yard, boom, gaff, or a flag. The part of the halliard attached to a yard is called a *tye*. For gaffs, the outer halliard is the *peak halliard* and at the gaff jaws is a *throat halliard*, named for the part of the sail it operates. *Downhauls*, *outhauls* and *inhauls* haul a sail along a boom, or up and down on a stay. *Sheets* hold the lower corners of a sail or boom. *Furling* means to bundle the sail up on its yard, boom, or mast, when not in use. *Clew lines* pull up the corners of a square sail, *leech lines* pull up the side, and *buntlines* pull up the belly of the sail for furling. *Brails* are like buntlines except they are used on loose footed fore and aft sails to pull the sail in toward the mast for furling. *Bowlines* are lines attached to the sides of a square sail to pull the sail forward. These are used primarily on 18th-century and older ships.

10. *Reef bands* are horizontal bands of reinforcement canvas that run across the sail. These bands have short sections of rope called *reef points*. These are used to tie the sail to the yard or boom to shorten sail in heavy weather. *Reef tackle* is used to pull the sail reef bands up (or down) to the boom or yard.

11. *Parrals* (also spelled parrel) are lines or devices for holding yards, booms, and gaffs to their respective masts and spars. A *truss*, *jeer* and *sling* are similar to a parral. These terms describe lines used to hold a yard up and against the mast. They are most common for lower yards. The *Pride of Baltimore II* has a truss on the fore lower yard and it is tightened from the deck. Its crew calls this line a *choker*, rather than a truss.

12. *Braces* are lines attached to the ends of yards for directing the yard angles and holding them taught. *Lifts* are standing or running lines for holding yards when lowered. A *topping lift* refers to a line for holding up the end of a boom when the gaff is down or when there is no gaff. A *vang* is a line which steadies a gaff from swinging sideways.

13. A *lazy jack* is a series of lines forming a finger-like spread of lines along a boom. These lines keep the sail from falling on deck when the gaff is lowered. On the *Pride of Baltimore II*, the topping lift and lazy jacks for the main boom are a combination rig. Lazy jacks were used on Chesapeake Bay skipjacks. I don't know if it's a Chesapeake Bay original rig or not.

This covers most of the important terms you should know for the *Pride of Baltimore II* model. For the future, get yourself a good book on nautical terms.

1. Rigging Options

Just as in rigging the real ship, there are numerous options for rigging the model. Here is a list of some of the possibilities. In the end, it's your choice, but a few comments are offered for your consideration:

Model with Sails

A. Rig the model complete with a full set of sails including all fore and aft sails, square sails, studding sails and the ring tail sail. Not many modelers go to this extreme. It is a good approach, if simply to have one model with all the detail. However, the mass of sail obscures a lot of the nice detail on the spars and on the deck. Sails really look better on a ship at sea, rather on a model sitting on a table.

B. Rig the model with sails, but omit the topgallant sail, studding sails, and ringtail. The topgallant furled sail would be stowed on deck, port side bulwarks, just aft of the main shrouds as shown on plan sheet 4. The studding sails, ringtail sails and their yards are stowed below on the real ship, so they are omitted from the model. The studding sail boom and ringtail boom would remain in place but would be shoved into a stowed position. This rigging choice is

not as top heavy as the one in item ***A***, but still has some of the drawbacks of cutting out the detail. Actually, a topsail schooner is a better candidate for sails than a square rigger. Fore and aft sails look nice on a model. With fewer square sails, the overall effect is less heavy.

Model with Furled Sails
Furl all the fore and aft sails and the topsail. Stow the furled topgallant sail on the port bulwark aft of the shrouds (it does not get furled in place). The topsail yard should be lowered on its lifts. All studding sails and ring tail sails and yards would be removed and stowed below on the real ship. The studding sail and ring tail boom would be put in their stowed position. This rigging option is a nice compromise. You will get the feel of having sails, yet because they've been furled they will let you see all the other detailing.

Model with Mixed Furled & Hoisted Sails
For this option, use a mix of furled sails and full open sails, or sails with yards partially down. The topsail could be partially pulled up by buntlines and clew lines. This look would give the ship an appearance somewhat like it might be while in port; some sails furled, and some still partially up as if drying out after a day's run. There are a lot of possibilities here, so look for a pleasing effect. Take a look at artists' paintings to get some ideas. Marine artist John Stobart's work is an ideal reference.

Model Without Sails
A. Without sails, the model should have the fore topsail yard lowered on its lifts. Omit the topgallant yard. The fore gaff should be in the up position, the main gaff in the down position on top of the main boom. This is a proper look, as if the ship is in port, and the sails have been removed for repairs. The only drawback is the main gaff. When down, which is where it should be for this rigging option, the space aft of the main mast looks awfully empty.

B. This option is the same as ***A***, except that you should put the main gaff in the up position. In this position you could fly the American flag on the flag halliards from the gaff. This is the approach selected by most modelers and typically what you see in museums. With the gaff hoisted, that empty space disappears and the overall model looks balanced. Beginners should definitely select this option.

2. Using the Rigging Plans

The details of all the masts and spars are shown on plan sheet 4. The actual rigging is shown on plan sheets 5 and 6. Sheet 5 shows a profile of the ship, the standing rigging, and the running rigging for fore and aft sails. It also shows the braces for the square sails. Plan sheet 6 has a section at the main mast and two at the fore mast, one with sails and one without. This sheet shows most of the rigging for the square sails. Sheet 6 also includes the important belaying arrangement, some block details, and some furled sail details.

Rigging plans are often confusing because of the numerous lines involved, and the fact that overlapping and concealing of some of the detail occurs. Every effort has been made to make the *Pride of Baltimore II* rigging procedure as clear as possible on the plans. Where a line goes behind something, a detail is referenced to show the entire rig. Also, the instruction manual shows more sketches to help you understand the entire rig.

3. Rigging Line Sizes & Colors

The rigging lines provided in the kit do not cover all the sizes shown on the plans. There are only certain sizes available and the kit contains only a .009" and .017" diameter line. It is suggested you use the larger line for all lines on the plans that are .012" or greater. You may want to search out different line sizes to get closer to the plan sizes, but you will not see any major improvement at this scale. If you do want more variances in size, look for linen or a good grade of cotton thread.

The color of the lines is shown on the plans. All lines should be tan or weathered grey, except where noted to be black. In general, most of the standing rigging will be black.

4. Wire vs. Rope Rigging Line

The real *Pride of Baltimore II* is a replica of a 19th century schooner, but because it was built in the 20th century, most of the standing rigging is wire instead of good old rope. For the model, cotton or nylon cordage is provided instead of wire, but the diameter is that of wire. You may observe that sometimes a lanyard between deadeyes is as large or larger than the standing line it serves. This is because the wire is much stronger than the hemp lanyard. On a ship with hemp shrouds or stays, the lanyard would be much smaller than the line it serves.

5. Treating the Lines

Worming, Parcelling & Serving: Lines on ships were wormed, parcelled and served (a method of protecting parts of a rope) where they are likely to be chafed, such as the shrouds. For models, worming ("laying thin pieces of line (the worms) between the strands"), and parcelling ("winding strips of canvas saturated with tar over the part wormed") is unnecessary. Only serving ("tightly binding the wormed and parcelled area in the other direction with spun yarn") should be considered. Serving the lines should be done with fine silk or linen thread. Avoid fuzzy cotton, if possible.

Since the real *Pride of Baltimore II* has wire rigging, worming and parcelling was not done. The wire is served with a small line, or just coated, or both. For this model, because of the small sizes, serving is not recommended. Just use the line as-is and coat it heavily with beeswax.

Seizings: Use sewing thread or silk to seize the lines. After securing each line, touch the seizing with thin super glue or diluted white glue (see figure 64 for some seizing methods).

Beeswax: Beeswax protects the lines against moisture and helps to eliminate fuzz. Hold the beeswax up to a light bulb if it is hard. Run the line across the beeswax block. Then run it through your fingers to soften it and smooth it out. Do this several times so you get a good coat of wax on the line.

6. Belaying Pins & Their Lines

You'll find a belaying pin arrangement on Sheet 6. See figure 65 which illustrates how to belay a line to a pin. While not all pins are used if you omit sails, the pins can, and should be, installed on the model.

Each pin location on the plan is numbered and is referenced on the particular line that gets belayed there or elsewhere on the plan. Sometimes a line goes to a

FIG. 64 – Seizing Methods

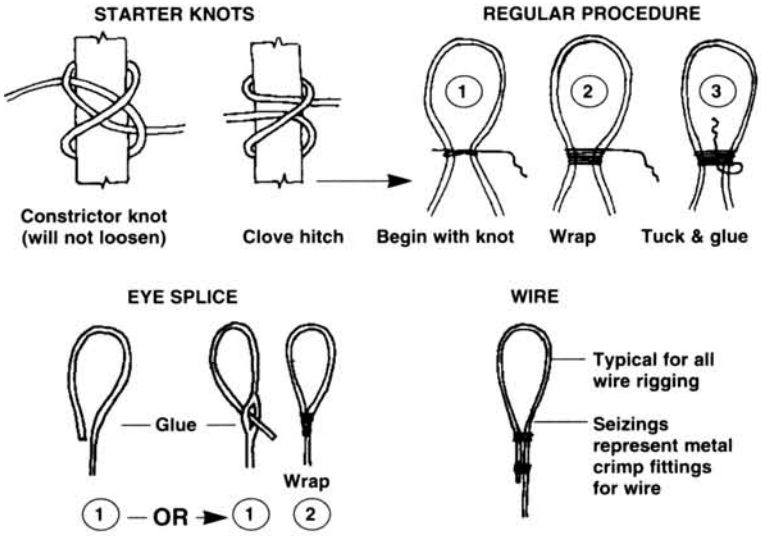


FIG. 65 – Belaying Lines at the Pins

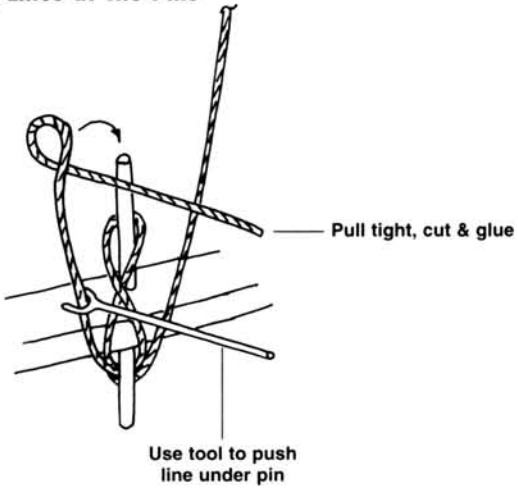
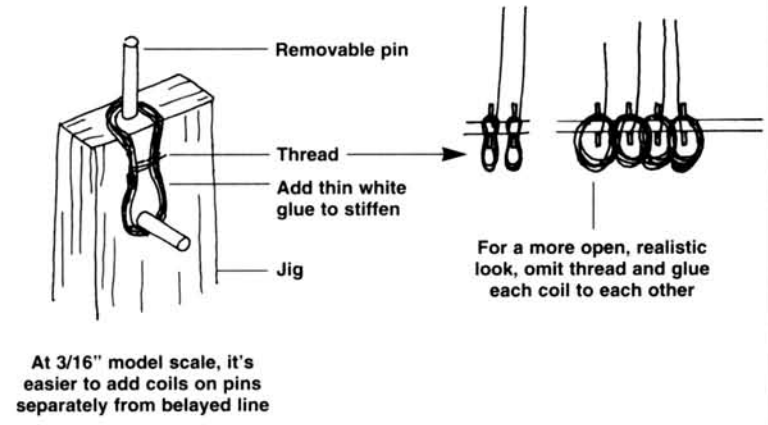
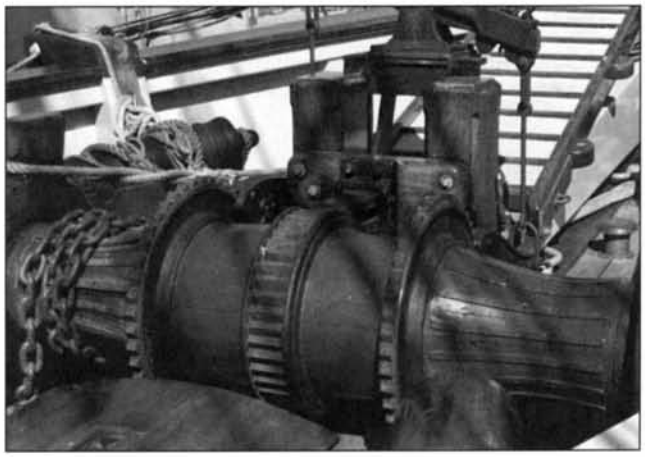


FIG. 66 – Coils of Rope at Each Belaying Point



Rigging lines belayed to fore mast cleats.

Details at the lower main mast.



Pride of Baltimore II windlass.

Swivel gun at the railing.

tackle before it goes to the belaying pin. In this case a detail will be referenced to show the tackle, then the belay number is referenced.

On this particular ship, conventional belaying pins as we know them are used at the side pin rails at the shrouds, and in the main rail aft. All the pins in the fife rails, at the head, and in the main boom and boom rest are actually fixed 1/2-inch diameter bronze rods, instead of regular removable belaying pins. For the model, glue in a piece of brass wire.

All belaying points should have a coil of rope (see figure 66).

7. Rigging Tools

It is possible to make some useful homemade tools essential for the rigging process (see figure 67). You can also purchase similar shapes commercially.

8. Blocks & Deadeyes

Rigging plans sheet 5 and 6 show all blocks and deadeye sizes required for a model with or without sails. Sheet 6 shows some block details. The sizes shown on the plans are actual model sizes. You will see a number of 1/16" blocks on the plans (4" full ship size), but you will not find this size included in the kit. Only 3/32" and 1/8" blocks are provided. It seems that the 1/16" wood block is no longer manufactured. You must use a 3/32" block provided, or file that block down to 1/16". The 3/32" block should be sufficient. It will not look out of scale at all.

When the plans indicate a bullseye, you will need to use a deadeye and ream out the center to make a bullseye. Commercial wooden bullseyes are currently unavailable.

The kit blocks and deadeyes should be sanded and the holes reamed larger, so it will be easy to reeve lines. An indispensable jig for holding small blocks is shown (see figure 68).

Stropping the blocks like the real ones is difficult at 3/16" scale. Some suggested modeling alternatives are shown (see figure 69).

9. Sailmaking

In order to keep the plans less cluttered, the sails shown on the plans are not completely drawn. However, there is sufficient information given for detailing a complete sail. Shown are the overall shape, seam spacing, and some details of corner reinforcements and attachments to spars.

When making sails, it is important to choose the right type of material.

Sail cloth for models must be light in weight, yet fairly opaque. A fine weave cotton cloth such as the unbleached 100% cotton muslin available from Model Expo is acceptable. An excellent choice is Egyptian cotton spinnaker cloth referred to as "ballooner cloth". Linen is an ideal material, but probably too heavy for 3/16" scale models.

The cloth must be pre-shrunk, so wash it several times. When dry, iron the cloth, but be careful not to scorch it. Next, draw the seams and hem (tabling) lines and other reinforcements in light pencil, then sew the seams. A sewing machine makes fast work of the project. Use light tan cotton thread so that the seams show up nicely. Make some trial passes on a

FIG. 67 – Homemade Rigging Tools

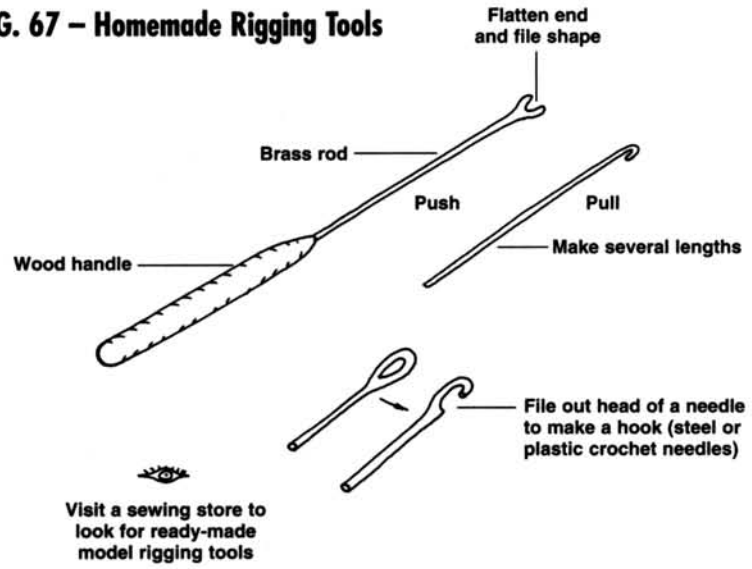

Flatten end and file shape
Brass rod
Push
Pull
Wood handle
Make several lengths
File out head of a needle to make a hook (steel or plastic crochet needles)
Visit a sewing store to look for ready-made model rigging tools

FIG. 68 – Block-Holding Jig

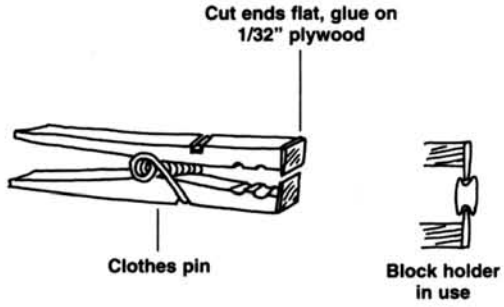
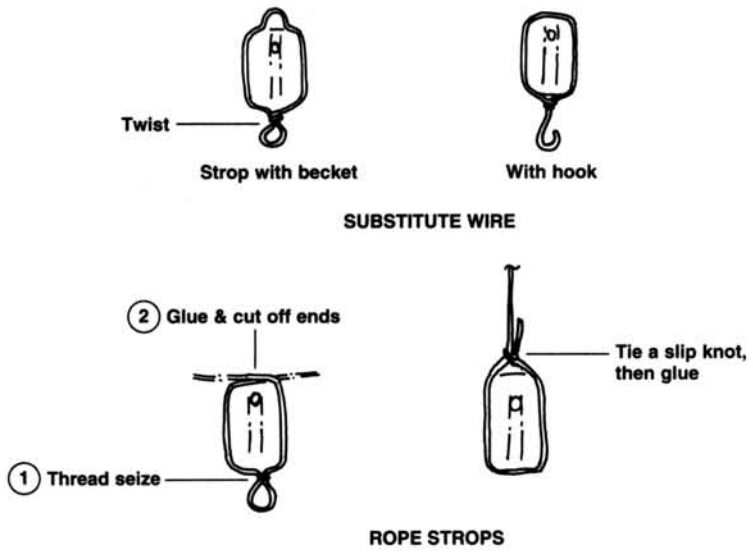


FIG. 69 – Stropping the Blocks



piece of scrap cloth and set the tension so the thread does not make puckers in the stitch line. No actual reinforcement patches need be used. Instead, simply sew two stitch lines to represent reinforcements, such as the reef bands (see figure 70).

After the stitching is completed, you may iron the sails. Be careful not to burn them. Next, cut the sail shape using line "A" as shown in the sketch. Then roll the hem according to the sketch, iron it flat, and then sew (as close to line "B" as possible). Tuck the ends and hand sew the corners as shown. The sail is now ready for stretching.

Stretching the Sails: This step will assure that the sail shape is correct, since it may have been altered during sewing. Using the original pattern, draw the outline of the sail's shape on a piece of paper. Place the piece of paper down on a solid ,but penetrable backing, such as a wooden board or cork. Now wash the entire sail again and lay it over the outline you've just drawn. Stretching the wet sail to the outline's shape, stick pins through its outer edges and into the backing to hold it in place. When the sail is dry, it will have the proper shape. Iron it flat.

Edge Boltropes & Reef Points: Sewing edge boltropes onto the sail can be omitted since they appear so small in 3/16" scale. However, if you wish to include them you may follow the tedious method shown (see figure 71). The sketch also shows how to install reef points.

Furled Sails: It is impossible to furl a sail made from the same material and of the same size used for the fully set sail. The cloth is usually too heavy, causing the sail to become too bulky looking. There are two solutions to this problem. First, you may use a lighter material such as Silkspan, which is a model airplane covering tissue; or second, you may elect to use the same cloth, but cut it to a proportion one-third the size of the original to reduce bulk (see figure 72). Make a test first to see how much material is required for a nice tight furl. Even if you furl the sails, you must still add some seams and hems, since the detailing will show.

10. Rigging the Model Without Sails

Even though you may have chosen not to include sails, you ought to include most all of the lines attached to the sails, such as topsail clew lines and sheets, buntlines and leechlines, and fore and aft sail halliards and downhauls. On the real ship these lines are not removed when sails are removed, but are simply shackled together, tied off to jackstays, or secured to some other stowage point. Plan sheet 6 shows the various riggings in the stowed positions.

The mast hoops should be in place on the masts. Include all the belaying pins even though there may be no lines belayed to them. Even if you show just the spares, they will look better than the bare holes.

When rigging a model without sails, most modelers do not install bunt and leech lines, or reef tackle and their blocks, and they omit most all of the sheets for fore and aft sails. The choice is yours. But, the more lines you install, the more fun it will be—and in the end, the more realistic.

FIG. 70 – Sailmaking

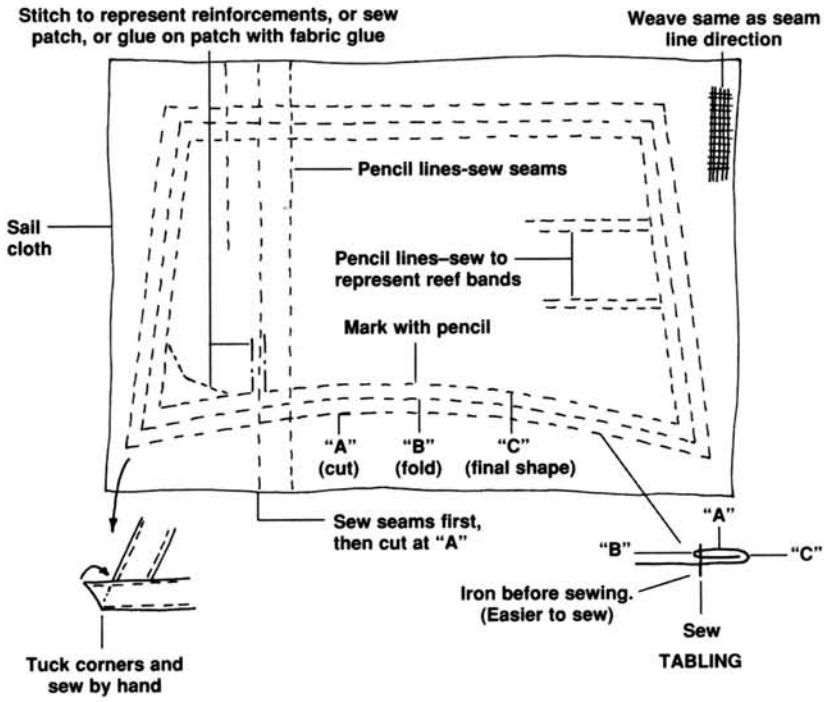


FIG. 71 – Sail Finishing

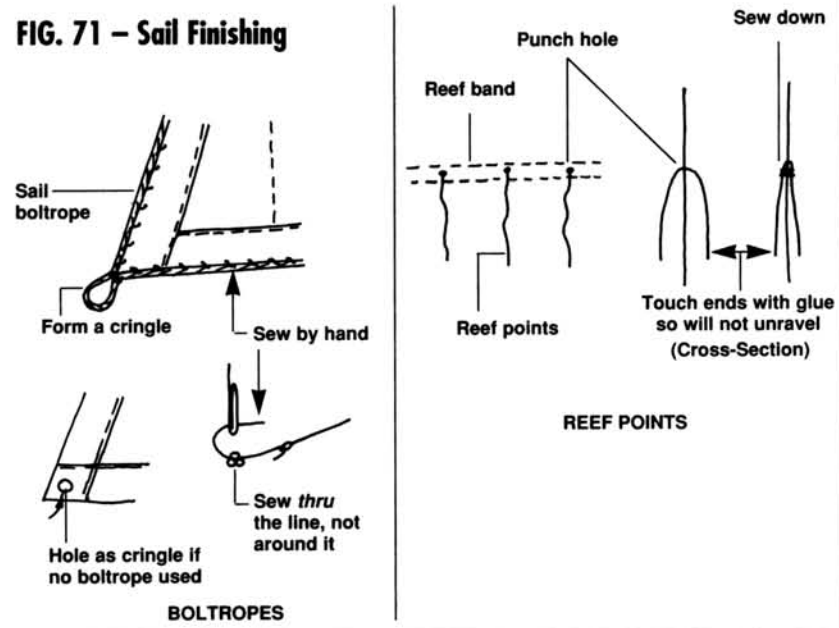
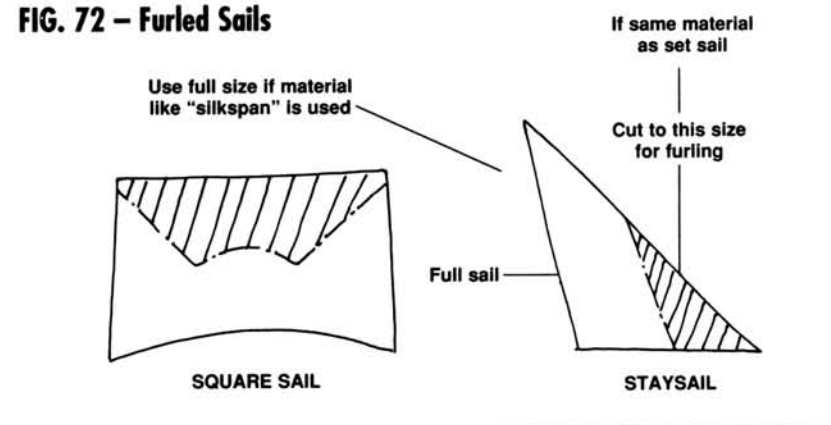


FIG. 72 – Furled Sails


If same material as set sail
Use full size if material like "silkspan" is used
Cut to this size for furling
Full sail
SQUARE SAIL
STAYSAIL

STAGE H

STANDING RIGGING

Keep your standing lines handy, sorted by sizes, and have them all nicely beeswaxed before you start. For seizings, you can use cotton, silk, or nylon sewing thread. These also should be beeswaxed beforehand. Keep your white and super glues handy for dabbing to seizings, if necessary, to hold them in place.

1. Shrouds

Begin the standing rigging with the lower shrouds. The lower deadeyes have steel chain plates. These are made of brass strip provided in the kit. Plan sheet 6 shows the proper sequence for installing the shrouds.

To set up the shrouds, make a temporary jig of brass wire to establish the spacing of the deadeyes for doing the seizing (see figure 73). This figure also shows the sequence for reeving the lanyards. Keep an eye on the masts as you rig shrouds, so you will not pull them out of line.

The fore topmast also will have shrouds, but not the main topmast. Instead of chain plates, however, there will be futtock shrouds. These can be made from brass rod and are connected to the mast band below the crosstrees (see figure 74).

After the shrouds are in place, add the ratlines. Three optional methods are shown (see figure75). In addition to the sheer pole just above the deadeyes, the *Pride of Baltimore II* also has some wood battens about every fifth ratline position instead of ratlines. Make sure you beeswax the ratlines well before they are installed. The wax will help hold the ratlines into a slight downward curve. If the ratlines tend to bow upward, tug them gently into position. You may need to add a little super glue to "freeze" them. Ratlines are difficult to do if you tie the clove hitches. Try to hold a group of shrouds between your fingers, so that as you tie the knots, you will not alter the spacing between shrouds.

2. Backstays

The backstays will be similar to the shrouds, except no ratlines will be connected. The forward backstay should go from the topmast directly to the deadeyes along the hull. The main backstays should first lead through holes in the end of the crosstree spreader.

3. Running Backstays

The running backstays can be added next or you could wait until the fore and aft stays are in place. Notice that the fall line for the port main running backstay should go through a snatch block on deck on its way to the bulwark cleat for belaying. Apparently, this was done to avoid the stowed topgallant yard and the sail located across the top of the cleat.

The running backstays will need baggy wrinkles along the line to "prevent sail chafing." There also should be one on the forward stay. On the real ship, these are fuzzy rope strands platted up. For the model, you can make them from wood, paint them, and if desired, sprinkle some wood dust, or other similar substance, in the paint to make them look fuzzy.

FIG. 73 – Spacing the Deadeyes

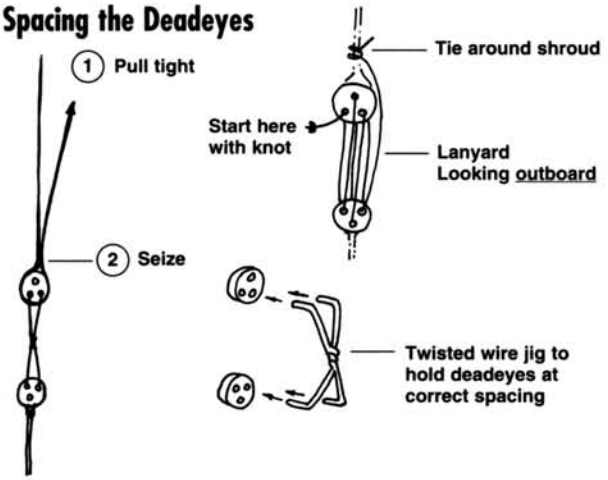

1 Pull tight
2 Seize
Tie around shroud
Start here with knot
Lanyard Looking outboard
Twisted wire jig to hold deadeyes at correct spacing

FIG. 74 – Futtock Shroud

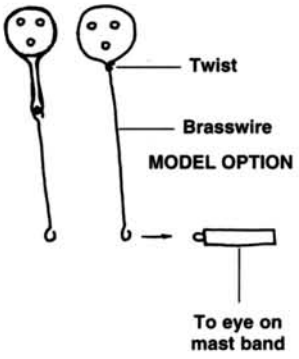


FIG. 75 – Ratlines

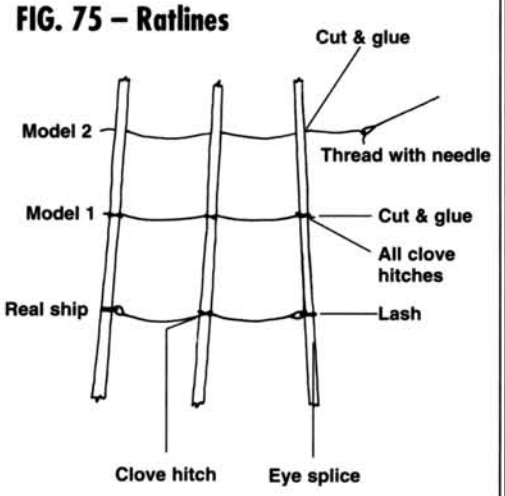
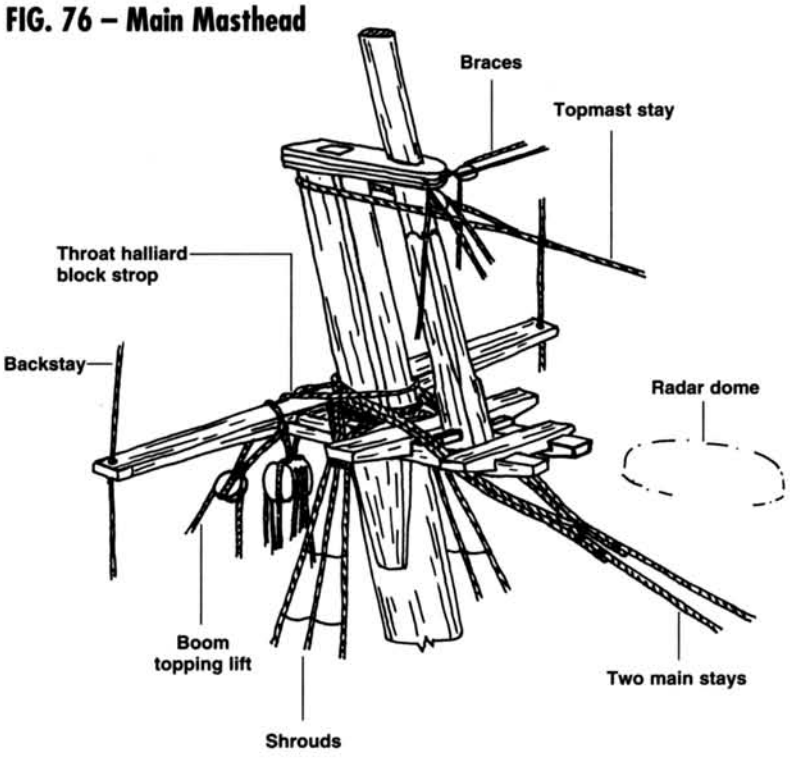
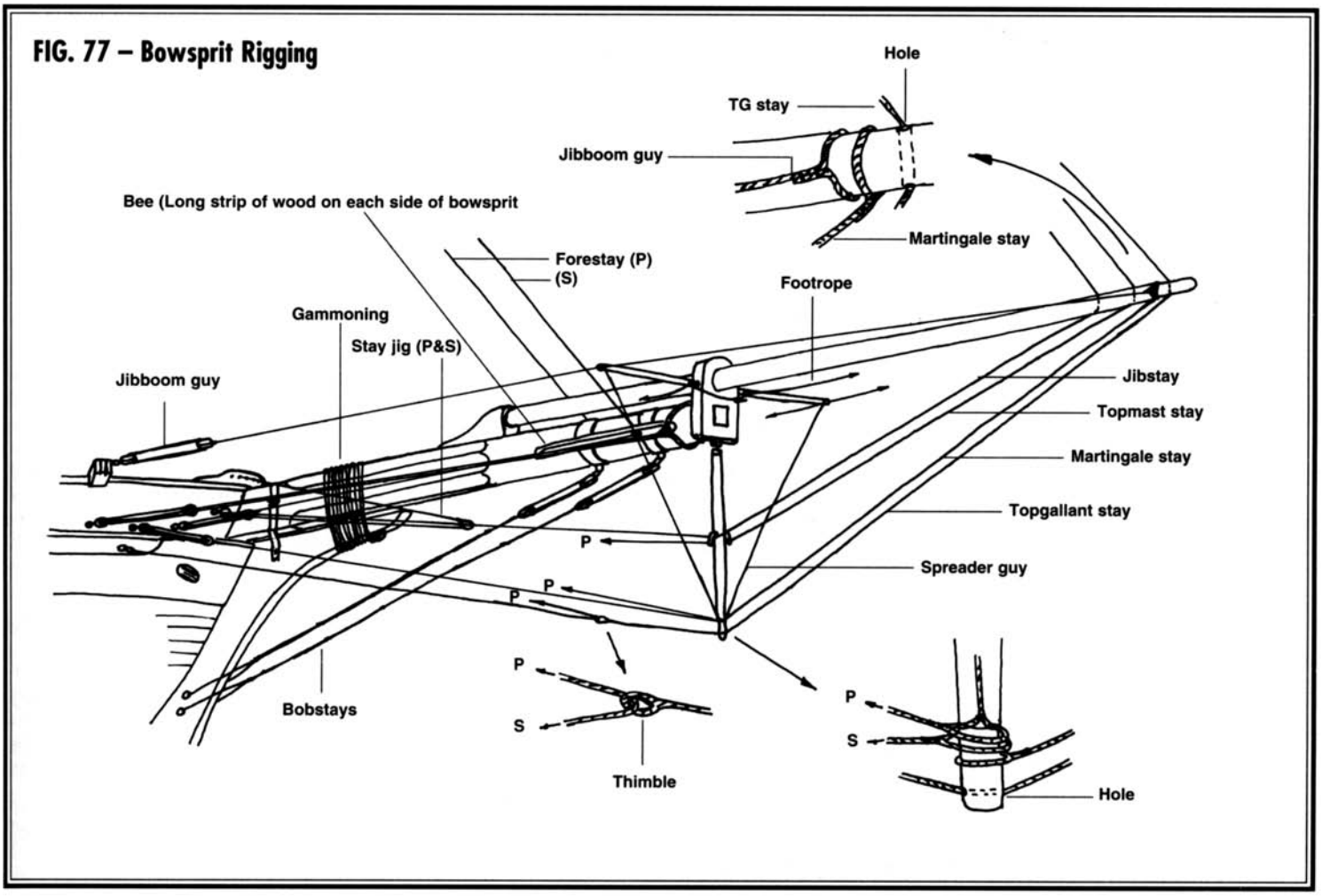


FIG. 76 – Main Masthead





4. Fore & Aft Stays

Install the fore and aft stays after you have completed the shrouds (see figure 76 for some detail at the mastheads).

The *Pride of Baltimore II* has two mainstays, one port and one starboard. Both have a running tackle at the deck so one can be slackened if necessary to get it out of the way of the foresail. The forestay is also two separate stays, the starboard one a little forward of the port one at the bowsprit. The fore staysail is fitted to the port forestay.

All of the foremast and fore topmast stays must go through holes in the jibboom and bowsprit bees (see figure 77 for location of bees), and back to the hull. Secure them to the hull with deadeyes and lanyards, except for the jib stay and topmast stay which require running jig tackles. These details are covered under the bowsprit rigging paragraph that follows later.

On the real ship, the main topmast stay and main topgallant stay are secured to the foremast cap by two iron turnbuckles. Shame on them! Designer Tom Gillmer probably did not intend it this way for an old time replica, but they are there in any case.

5. Bowsprit Rigging

The bowsprit rigging is next (see figure 77). When adding the gammoning, which ties the bowsprit to the stem, wrap it neatly, laying each part of the line side by side as you go. Seize the center after the line is wrapped.

The bobstays should be a double line seized together. Use bullseyes rather than deadeyes. If the kit contains no bullseyes, simply ream out holes in some deadeyes and use them. Or, you could use the deadeyes as-is.

The bowsprit has a mass of lines for crew safety and containing the sails when dropped. These lines run in the same direction as the bowsprit and can be installed similar to the ratlines for the shrouds. Make the forward netting separately, then seize it to the jibboom guys. You can create the net by actually tying, or gluing lines together. You may also be able to find a suitable net in a florist or craft shop. They have a number of net-looking nylon meshes used for flower corsages.

6. Footropes & Studding Sail/ Ringtail Lashings

As noted earlier, footropes for the yards, boom, and bowsprit, and lashings for the studding sail boom, are more easily installed while the spars are still in hand. Like the ratlines, you may need to work on the footropes a bit to get them to hang naturally.

This completes the standing rigging. Take another look before you move on. Check to make sure you did not pull a mast, or the bowsprit and jibboom, out of alignment. Now is the time to correct all of your mistakes.

STAGE I

RUNNING RIGGING

It is now decision time. Will you rig with sails, or rig without? The following paragraphs discuss both choices and how to go about rigging them. Each particular sail, along with its spars, is presented separately so you can finish one sail grouping entirely before moving to the next. The sequence is not that critical, but it is recommended that you start at the bow. Do all the fore and aft sails first, then add the square sails.

The Jig Is Up! Most old-time rigs have a running end and a standing end. The standing end goes to an eyebolt or other fixed point. The other end is the running, or hauling end. The *Pride of Baltimore II* topsail yard halliard rig is a good example of this rig: the standing end goes to an eyebolt on the starboard rail, and the running end on the port side has a purchase that belays to the pin rail. In contrast, most of the other rigs on the ship, such as head sail halliards, main and fore peak halliards and throat halliards have a tackle on the standing end, yet all the hauling is done on the other, or running end. On the *Pride of Baltimore II*, this tackle on the standing end is described as a *jig*; i.e., a halliard jig, throat jig, etc. Captain Glover explained that this tackle is for "tuning up" the rig. During normal operations at sea, the tackle is not touched—all the hauling is done from the running end, which in most cases, does not have a tackle at all. This type of rig is unique to *Pride of Baltimore II* and not generally found in old rigging texts.

1. Jib Topsail, Jib & Fore Staysail

For simplicity, this group of sails can also be called *head sails*. So, if you've decided to install sails on the model, add the halliard blocks with rigging line, downhauls, and sheets to the sails before installing them. Allow extra length for each line, so that when you finish reeving them through the various blocks, you will have enough left for belaying. Secure all the head sails to the stays using metal hanks. On the model, you can use a simple brass ring (see figure 78). The downhaul fairlead also requires a hank which should be lashed to the sail about midway up the sail.

Plan sheet 5 shows the rigging for the head sails and the block locations. The sheet for the jib topsail that leads to the mooring chock and cavel belay point should be run outside of the fore shrouds, so it will be clear for "running". The other sheet not in use should simply drape loosely over the sail to the other side. You can rig the fore and aft sails on either tack you desire. Just remember that one sheet should be taught, and the other slack. Generally, you should keep them consistent throughout the ship. Plan sheet 5 shows them on the port side.

If you've decided not to use sails in your rigging plan, attach the halliard block to the downhaul and take the downhaul to the end of the jibboom as shown (see figure 79). The halliard runs are identical to a rig with sails, except for the location of the head block. The sheets can be omitted. The fore staysail sheets, however, require a belaying pin on the pin rail especially for storing the sheet, so you could install these sheets and attach them to the designated pins: adds a little more detail for interest.

The upper block for the jib and staysail halliard jig can remain in the same location with or without sails. Since the hauling is done on the other end, the jig blocks will not move when sails are raised or lowered. This would not be true if the tackle was on the hauling end. The topsail yard halliard shown on plan sheet 6 is an example.

2. Foresail

Bend the foresail to the gaff with lacing as shown (see figure 80). Add the peak and throat halliard blocks and brail blocks, and make up the two halliard jigs to go on the main rail. Add the foresail sheets to the sail.

Next, install the gaff and seize the sail to the mast hoops with thread. Reeve the peak and throat halliards and add the gaff jaw parral. Seize the brail blocks to the masthoops (if you installed the brail blocks back when we talked about the masts, you are ahead of the game). Add the brail lines. Don't pull up the brails so tight that it causes you to pull in the sail. Add the sheets, and the fore tack at the mast, and finally, the port and starboard gaff vangs. Lay the other loose sheet on the deck and shackle it to the deck eyebolt, then belay it.

If you don't rig a foresail, install all the brail blocks, but omit the brail lines. The gaff can remain aloft in the same position with a foresail. The sheets can be detached from the sail and hooked to the pin rails for stowage, or omitted. If you want to use a furled foresail, see the sketch on plan sheet 6. This is the proper look. The sail should be furled on both the gaff and the mast.

3. Mainsail

The main sail should be bent to both the boom and gaff, with all blocks and lines attached prior to installation (see figure 81). Do as much in-hand work as possible. After installing the boom and gaff, seize the sail to the mast hoops with thread. The halliards are the same as on the foresail, and should be reeved first to hold the rig up.

The boom guys shown on plan sheet 5 are used only when the ship is in port or at anchor. They are used to steady the boom. If you rig the model with no sails, or furled sails, the guys should be installed.

The main boom sheets look a little odd with a single and double block up at the boom rather than a triple block. Captain Glover explains that it is because of weight, and because the lines lead better through the two blocks. Well, what do you know!

With no mainsail, you can bring the gaff down or leave it up. This ship does have a single gaff vang both port and starboard, so with the gaff up, you can use the vangs to steady it. Belay the vangs anywhere along the rail (normally, they are belayed to the boom).

4. Ringtail

If you install the ringtail, it should be made up along with the mainsail. The entire mainsail and ringtail should be installed together. Again, do as much in-hand work as possible. Without sails, leave the ringtail boom in place, or omit it. Omit the ringtail yard.

5. Main Gaff Staysail

Add all the necessary lines to the sail before installation. Seize the sail to the mast hoops, then run all the lines to their respective belaying points. Like the head sails, there is a port and starboard sheet. One is tight, the other passes over the main gaff loosely to the other side.

If you want to rig furled sails, plan sheet 6 shows how this sail should be neatly furled on the port or starboard side of the main masthead. If the sail is omitted, the mast hoops just sit stacked on the topmast at the mast cap. Secure the halliard block to one of the downhaul lines.

6. Fore Topsail & Lower Yard

The topsail has all the goodies; buntlines, leech lines, and reef tackle. The sail should be bent to the topsail yard jackstay on the forward side of the yard. Use thread to seize the sail. The buntlines and leech line reeve through thimbles seized to the jackstay (see figure 82). On most old ships, this fairlead would be a block rather than a thimble. So much for economy in the 20th century!

After the sail is attached to the yard, and with as many lines as you can get on the rig, install the yard. The parrel can be simplified on the model as shown (see figure 83). Reeve the halliard first so it holds the yard in place. Remember that the yard with a sail is in the up position, and without a sail it is down, hanging on its lifts. Plan sheet 6 shows the proper locations.

There are a mass of blocks on the topmast shrouds for the buntlines, leech lines, reef tackle, lifts, and stunsail halliards. After the lines have been rove through these blocks, they should pass through fairleads at the crosstrees on their way to their belaying points at deck level (see plan sheet 6 and figure 84). There is one exception. The topsail yard lifts stop at the crosstrees and are tied off to the crosstree. This is indicated on the belaying arrangement of plan sheet 6.

The lower yard of the *Pride of Baltimore II* has no sail (course). The decision not to have one was made during the construction of Pride I (a typical Baltimore Clipper would have had a fore course sail for light wind conditions). Consequently, the lower yard's primary job is to hold the sheets of the topsail.

The lower yard does not have a halliard and should be hung by a chain sling. Make a truss and place it around the mast as shown (see figure 85). The truss can be tightened at deck level. The *Pride II* crew calls this truss a choker. The lower yard requires braces that lead back to the main shrouds as shown on plan sheet 5.

Plan sheet 5 shows what the fore topsail would look like if furled. There is also a complete view of the rig without sails. Notice that the sheets and clew lines are shackled together, and the leech and reef lines are likewise shackled. Here, you have an option. Install all the lines as shown, or omit the buntlines, leech lines and reef tackle. If you do omit the lines, the blocks still should be installed.

FIG. 78 – Hanks

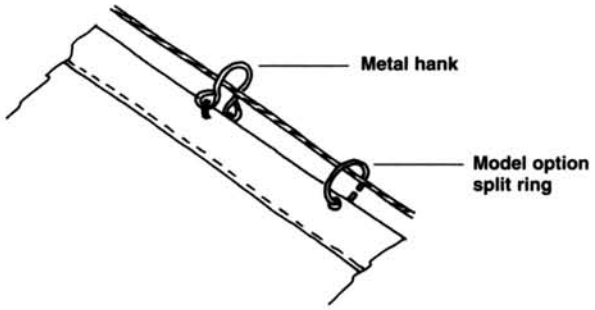


FIG. 79 – Sails Omitted

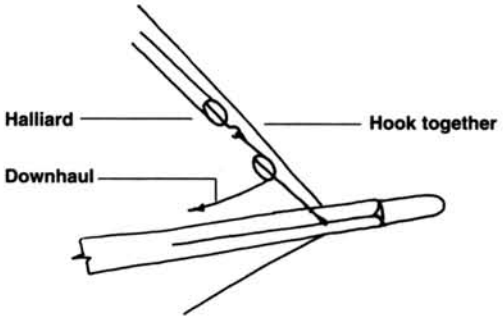


FIG. 80 – Bending The Foresail

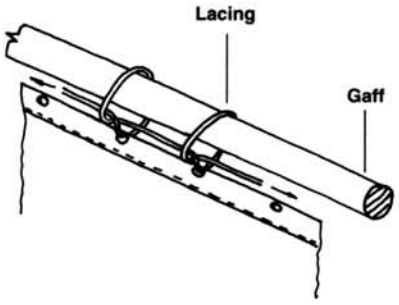
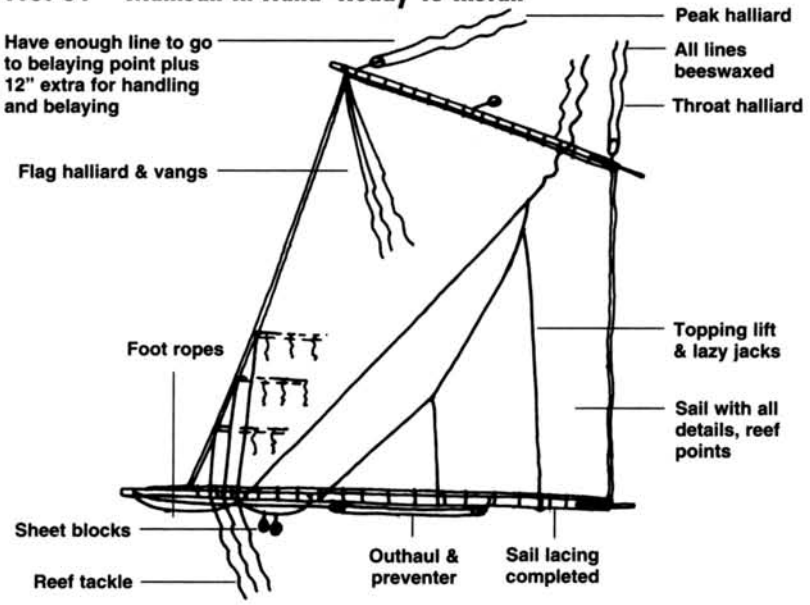


FIG. 81 – Mainsail In Hand–Ready To Install


Peak halliard
Have enough line to go to belaying point plus 12" extra for handling and belaying
All lines beeswaxed
Throat halliard
Flag halliard & vangs
Topping lift & lazy jacks
Foot ropes
Sail with all details, reef points
Sheet blocks
Outhaul & preventer
Sail lacing completed
Reef tackle

7. Studding Sails

Bend the stunsail to the stunsail yard with lacing similar to the gaffs. The halliard should go through a block on the topsail yard. Notice on plan sheet 6 that the stunsail tack goes to deck at the aft cavel when in use. If no stunsail is installed, the tack line is knotted off at the block, and the running end of the line is coiled up and stowed on the topsail yard.

When the sail is omitted, the yard also should be eliminated. The halliard can be knotted off at the block, or you should drop the yard to the deck on the halliard. Then remove the yard and belay the halliard somewhere along the shrouds at the rail. This latter scheme is possible, but will look somewhat awkward on the model. It is preferable to knot off the halliard at topside. With no sails rigged, the stunsail boom is shoved in toward the mast.

8. Fore Topgallant Sail

The topgallant yard has no jackstays, so the sail should be bent to the yard by a lacing similar to the gaff lacing for the foresail. The sheets reeve through a block at the end of the topsail yard and belay to a cleat on the topsail yard yoke instead of going all the way down to the deck. The yard has no braces. The sail should fly freely, held by the halliard and sheets. If sails are omitted, the topgallant yard should come off and you should stow it on the port bulwarks.

9. Miscellaneous Rigging

Anchor Burton: The anchor burton is shown on sheet 6 in its stowed position on the forward side of the foremast. It should be hooked into an eyebolt just above the mast cleats.

Flag Halliards & Flags: Position flag halliards at each topmast pole, at crosstrees, and on the main gaff, and main boom topping lift. They should be single lines that you reeve through very small metal blocks. The flags are detailed on plan sheet 6. They are an American flag, Pride of Baltimore II pennant, Maryland flag, and City of Baltimore flag. The real ship flies the American flag on the gaff or topping lift halliard. The halliard on the topping lift is used when the ship is in port and the gaff is down. On her maiden voyage, the ship flew a 15-star, 15-stripe flag. It is a replica of the flag that flew over Fort McHenry during the war of 1812 and inspired Sir Francis Scott Key to write the Star Spangled Banner. This flag is still flown today. Never is a modern flag flown.

If you decide to add the flags and pennants, you can make them from light weight cotton cloth and paint the colors on with acrylics. Acrylic paint is fairly flexible. Paper can also be used. Shape the paper before installing the flags so that they hang as naturally as a flag might.

Gantlines: The gantlines are single lines rove through single blocks at topside. Both ends of the lines are belayed together. These simple tackle are used to hoist the ship's boat or anything else, such as deck equipment and cargo. Plan sheet 6 shows the locations and details of the six gantlines.

Main Stay Hauling Tackle: The ship has two mainstays with a runner at the forward end. When sailing, one mainstay is left loose so it will not be in the way of the foresail. The dead weight of the loose stay pulls it back toward the main mast. To get the stay out toward the bulwarks, a small tackle is fitted port and star-

FIG. 82 – Buntlines & Leech Lines

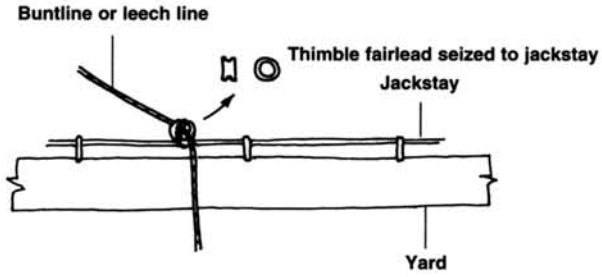
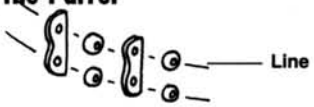
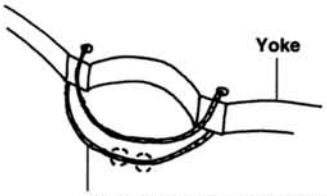


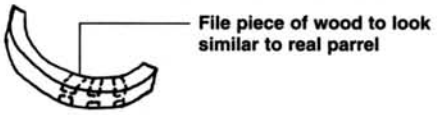
FIG. 83 – Simplifying the Parrel



REAL SHIP PARREL PARTS



Use simple line or add beads from craft shop (beads must be close to scale)



MODEL OPTION TOPSAIL YARD PARREL

FIG. 84 – Fairleads & Thimbles

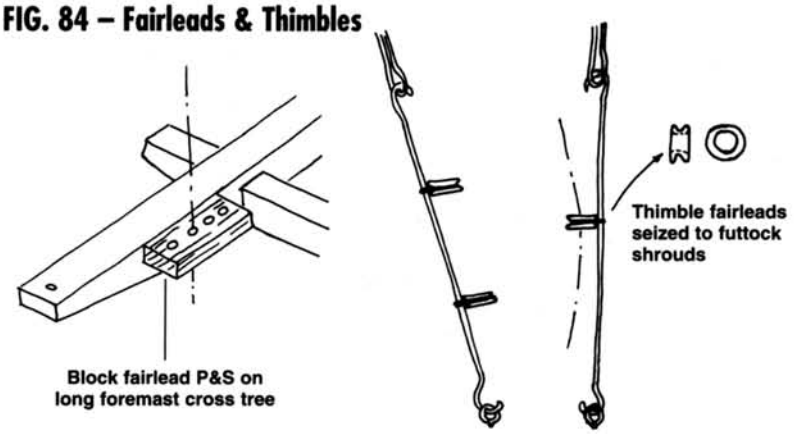
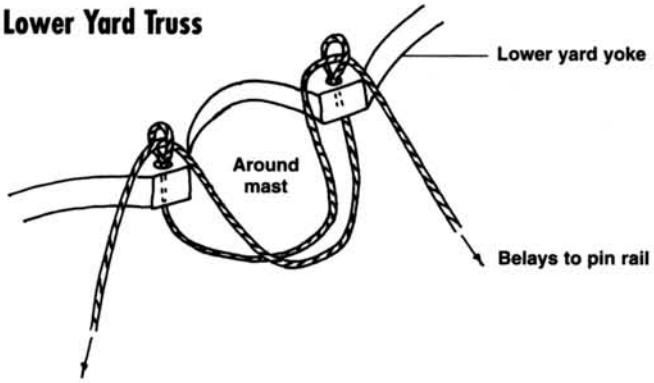


FIG. 85 – Lower Yard Truss



board on the main shrouds. The details of this tackle and the stowage method are shown on plan sheet 6.

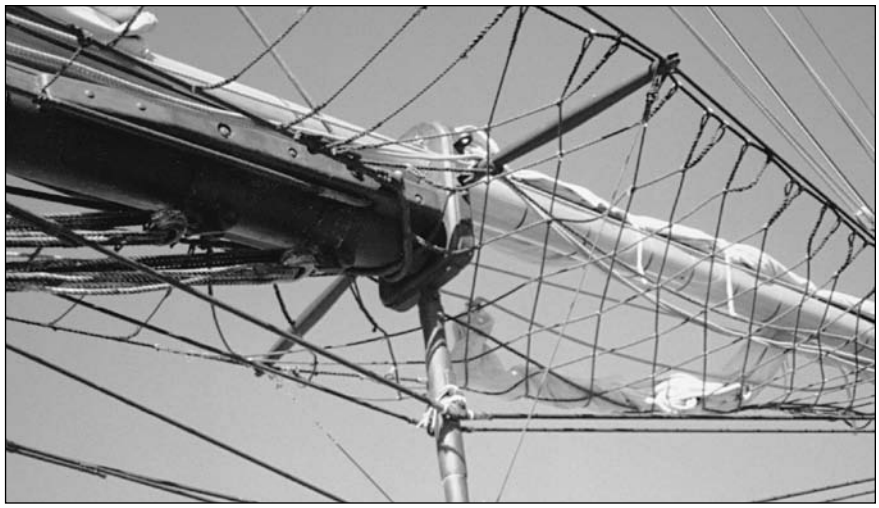
10. Final Touches

After all the rigging is in place, recheck every line, and make sure all the seizings are sound. If necessary, add another touch of super glue to seizings. Check to see if there are any shiny places on the rig. If necessary, touch up the standing rigging with black paint, or black liquid shoe polish. For running rigging, use a tan stain, or brown liquid shoe polish. Check to see if you have fouled any of the painted wooden parts during the rigging process and make repairs as necessary.

Congratulations—you've done it! Your model is completed and we hope you like the results. If this was your first effort, and you're less than happy, remember that it is only through repeated experience that your level of skill will develop. Subsequent models can only get better! We look forward to helping you with your next ship modeling project.

Area of bowsprit showing gammoning at the stem.

View of main mast cap, topmast & yards.



Dolphin striker & guy spreaders on bowsprit

Ship's name on port side of bow.

View of ship at stern.

BIBLIOGRAPHY

1. *The Baltimore Clipper*,
by Howard Irving Chapelle.
1930, Marine Research Society. Reprinted by Bonanza Books, Crown Publishing. This is a complete history of the Baltimore Clipper type. It contains many plans of contemporary schooners.

2. *Sailing With Pride*,
by Greg Pease, Thomas C. Gillmer and Barbara Bozzuto.
1990, C.A.Baumgartner Publisher, Baltimore, MD. A little history, but mostly great photographs of both Prides.

3. *Pride of Baltimore:*
The Story of the Baltimore Clippers, 1800 - 1990,
by Thomas C. Gillmer.
1992, International Marine, Camden, Maine. This book is an in-depth history of the type and discussion on building both the *Pride of Baltimore* and *Pride of Baltimore II*, illustrating some of the original design drawings, and photos during construction.

SCALE CONVERSION TABLE

RIGGING

Diameters for Lifesize Vessel	Diameters in Tenths of an Inch	Diameters Converted to 3/16" Scale
		Inches in 10ths ÷ 64=
5/16"	.3125"	.005" (.12mm)
3/8"	.375"	.006" (.15mm)
1/2"	.5"	.008" (.20mm)
5/8"	.625"	.009" (.25mm)
3/4"	.75"	.012" (.30mm)
7/8"	.875"	.014" (.35mm)
1"	1"	.016" (.40mm)
1-1/4"	1.25"	.020" (.50mm)

BLOCKS

Lengths for Lifesize Vessel	Lengths Converted to 3/16" Scale
	Inches in 10ths ÷ 64=
4"	.06" (1.52mm or 1/16")
5"	.08" (2.03mm or 5/64")
6"	.09" (2.28mm or 3/32")
7"	.10"(2.54mm or 7/64")
8"	.13" (3.18mm or 1/8")
10"	.16" (4.06mm or 5/32")
12"	.19" (4.83mm or 3/16")

RIGGING LINE DIAMETERS

.10mm (.004")

.20mm (.008")

.25mm (.010")

.40mm (.016")

.50mm (.020")

.60mm (.024")

.75mm (.030")

.80mm (.032")

.90mm (.035")

.95mm (.037")

1.00mm (.039")

1.20mm (.047")

1.25mm (.049")

1.30mm (.051")

1.50mm (.059")

1.60mm (.063")

1.70mm (.067")

1.75mm (.069")

2.00mm (.079")

2.50mm (.098")

FORMULAS FOR CONVERTING MILLIMETERS AND INCHES

1 mm = .03937 of an inch

To find tenths of an inch:
.03937" x mms = tenths of an inch

To find mms from tenths of an inch:
Tenths of an inch ÷ .03937" = mms